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ABSTRACT

This report presents results of several studies of the effectiveness of special education. Major findings of a review of other studies indicate: youth with learning disabilities tend to have the highest rate of employment (71 percent) followed by youth with speech handicaps or mild mental retardation (50-60 percent). Postsecondary educational participation was greatest (40 to 50 percent) for individuals with hearing or visual impairments. Nonparticipation rates for the severely impaired was approximately 60 percent; for individuals with mental retardation approximately 40 percent; and for persons with emotional disturbance and physical impairments about 33 percent. Living arrangements varied little among disability categories with independent living rates generally about 20 percent. A study of special education effectiveness in Texas found, overall, 66 percent of former students employed (compared to a national rate of 40 percent); 25 percent participating in some type of postsecondary education; and 21 percent nonparticipatory. A longitudinal study currently in process includes close to 1,000 students in special education. Major recommendations include: (1) systematic cooperative ventures between special and regular education; (2) systematic cooperative planning and programming between special education and outside public agencies; (3) a focus on parent involvement in transition planning; (4) prevention of dropping out among special education students; and (5) specific programming for female students with disabilities. An appendix details the job placements of students in the longitudinal and retrospective studies. (Contains 70 references.) (DB)

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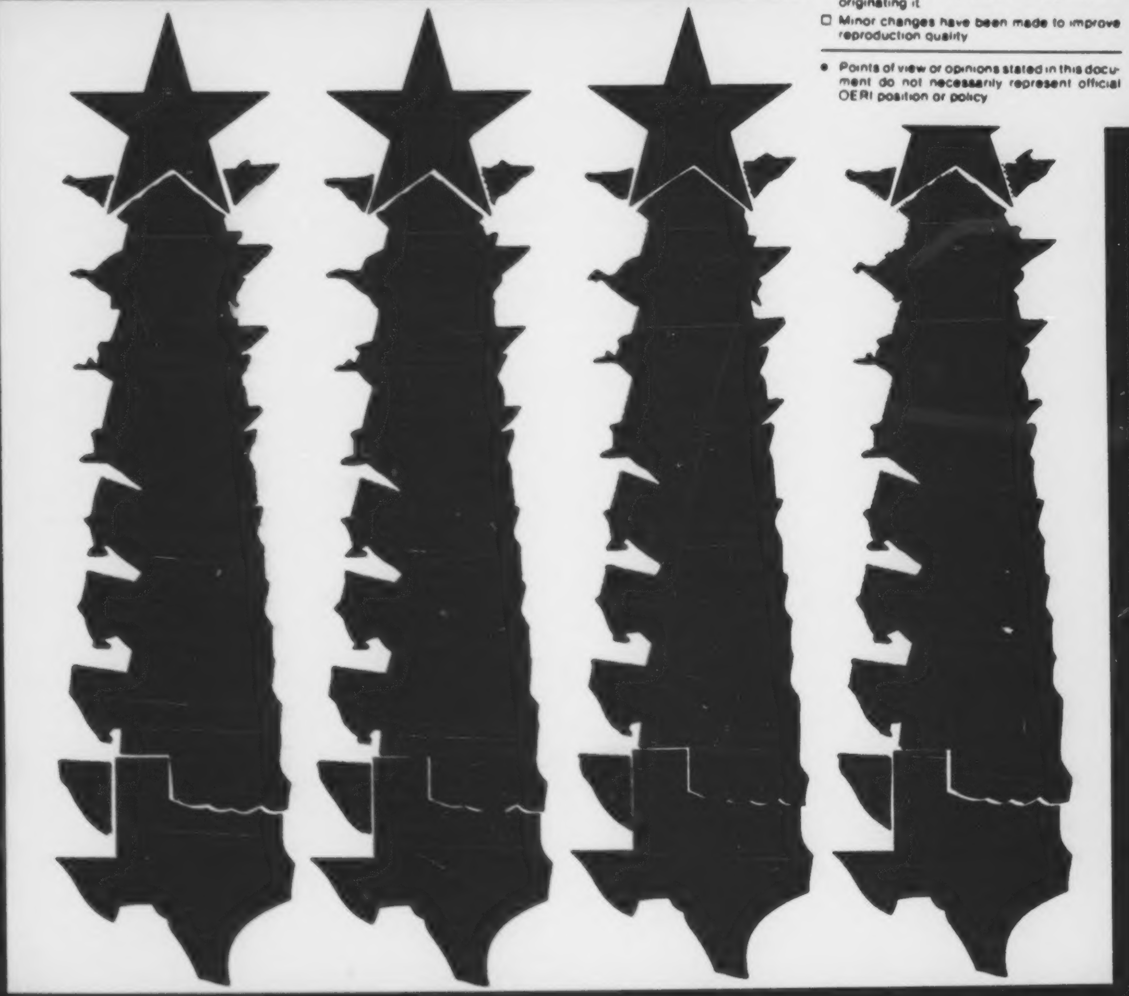

THE EFFECTIVENESS OF SPECIAL EDUCATION IN DEVELOPING LIFE SKILLS OF STUDENTS

FROM THE STATE BOARD OF EDUCATION

TEXAS EDUCATION AGENCY
AUSTIN, TEXAS

February 1991

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THE EFFECTIVENESS OF SPECIAL EDUCATION PROGRAMS IN DEVELOPING LIFE SKILLS OF STUDENTS

Texas Education Agency
Division of Program Evaluation
Austin, Texas
1991

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EXECUTIVE SUMMARY

Youths with disabilities generally do not fare as well as their nondisabled peers after leaving public school. Their employment levels tend to be lower and they do not pursue postsecondary schooling as often as the nondisabled. Nationwide, nearly one-third of special education graduates are neither working nor receiving additional education or training. Their rates of nonparticipation (commonly referred to in professional literature as "unengagement") in employment, training, education, or other similar activities, range from 17% to as high as 67%.

This report describes the results of several studies and provides a comprehensive review of national and state studies of the effectiveness of special education. Comparisons among categories of disabilities reveal considerable variation. Youth with learning disabilities tend to have the highest rate of employment (71%) followed by youth with speech handicaps or mild mental retardation (50 - 60%). Youth with physical or perceptual disorders, such as visual, hearing, or physical impairments, have employment rates of about 40%. Finally, minimal employment rates are found among persons with multiple handicaps, autism, or persons who are deaf/blind.

Postsecondary educational participation differs among categories of disabilities as well. Research indicates that the highest rates (in the 40% - 50% range) are achieved by individuals who have hearing or visual impairments. These are followed by rates in the 20% - 30% range for individuals with speech handicaps, learning disabilities, physical impairments, and emotional disorders. Among individuals with mild mental retardation, educational participation rates are about 14%.

Nonparticipation or nonengagement rates for the severely impaired (those with multiple handicaps, deaf/blind, or severe mental retardation) are high--approximately 60%. Individuals with mental retardation have nonparticipation rates of approximately 40%. Persons with emotional disturbance and physical impairments have nonparticipation rates of about 33%.

Living arrangements vary little among the disability categories. Other than those with severe handicaps (multiple handicaps, deaf/blind, or severe mental retardation), independent living rates are about 20%. Persons with visual impairments and hearing impairments have higher independent living rates, in part because of their higher rate of college attendance. Persons with emotional disorders tend to leave home and live independently at higher rates.

This report also contains the preliminary results of a statewide study of the effectiveness of special education in Texas. Comparisons are made to the findings in the literature review. Overall, 66% of the former students in special education are employed (compared to a national rate of 40%); 25% are participating in some type of postsecondary education (compared to 25% nationally), and 21% are nonparticipatory (compared to 32% nationally). Overall, 59% are living

at home (compared to 66% nationally) and 30% are on their own (compared to 18% nationally).

Because few data were obtained for some disability categories, results are presented for only the three categories of disabilities for which adequate data were available--mentally retarded, emotionally disturbed, and learning disabled. In general, results from this preliminary retrospective study indicate findings similar to national results. Approximately 69% of youth with learning disabilities are employed, 27% are participating in postsecondary education, and 16% are nonengaged. The majority are living at home (57%) and 35% are living independently. Of those youth with mental retardation in this sample, 48% are employed, 8% engaged in any postsecondary education, and 32% nonengaged. However, another 13% are on waiting lists for additional vocational assessment or training, making the actual nonparticipation rate probably higher. Sixty-five percent of individuals in this category are living at home, compared to only 8% who are living independently. Of youth with emotional disturbance, 63% are employed, 32% engaged in postsecondary education, and 32% nonengaged. Fifty-eight percent are living at home and 31% are living independently.

Although data from the retrospective study match in many respects findings from other state and national research, this fact does not suggest that special education should rest complacent. Between one fifth and one third of graduates are not engaged in productive activities. There is clearly a need to improve the effectiveness of special education for all students with any disability. One of the purposes of the longitudinal study described in this report is to enable this improvement to happen.

The longitudinal study includes close to 1,000 students in special education, representing all disability categories. In addition, a description of two other studies that form part of the comprehensive evaluation is also provided. One is a study of transition planning for a younger cohort of 500 students in special education, which will enable comparisons to be made of youth who have received transition planning to those who have not. A study of family and community contexts is also described, because the social and familial contexts within which education occurs profoundly affect the outcomes of students.

During the next three years, the comprehensive evaluation of special education effectiveness will be connected to continuing work on academic excellence indicators. In addition, data from the Public Education Information Management System (PEIMS) will be incorporated into the studies as appropriate, and final results from the evaluation will be analyzed with respect to data elements that may be appropriate for inclusion in PEIMS.

Finally, this report describes the results of a study of special education monitoring, and implications for special education programming.

Recommendations are provided that synthesize the findings from the national review and suggest a framework for the on-going evaluation activities. These recommendations indicate that attention to issues of specialized vocational training, coordination with outside agencies, parent involvement, dropout prevention, and gender are vital.

Major recommendations include the following.

- Systematic, cooperative ventures between special education and regular education, especially with respect to vocational training, are vital for the facilitation of positive outcomes for youth with disabilities.

- Systematic, cooperative planning and programming between special education and outside public agencies are necessary to facilitate positive transition experiences for youth with disabilities.

- Parent involvement increases the opportunities for positive transition experiences. It should become a major focus of transition planning.

- Dropout prevention is vital for students in special education. Dropout rates are close to 50% for students with certain disabilities.

- Female students with disabilities may require specific programming to help them make a positive transition. Female students with disabilities tend to have a greater number of negative outcomes than male students with disabilities.

INTRODUCTION

In the past few years, accountability has become a central principle in education. Are students leaving school with the skills that employers seek? Do students have the knowledge to become productively engaged after at least twelve years of schooling? The past five years have witnessed an unprecedented interest in the outcomes of all students, including those in special education. Central to this interest has been factors related to the engagement--employment, post-secondary schooling, or societal participation--of adults with disabilities.

This interest comes at a time when special educators want to know how well their programs prepare students for the obstacles that many of them will face. Many want to know what becomes of the students whom they taught for many years. It comes at a time when educators are redefining their roles amidst changing expectations about the parameters of education. How much can special education expect to accomplish when many of the influences upon students occur outside of school?

At both the national and the state level, educators have rallied around the demands for accountability by focusing on the integration of students with disabilities with nonhandicapped peers. Bringing students back from separate campuses and teaching them with their peers--in the same classroom when possible--have become more common. At the same time, more emphasis has been placed upon transition planning for students. This involves looking closely at the preparation of students with disabilities for their post-school experiences by providing them with work-related training and social/interpersonal skills before they graduate.

To address the accountability of special education programs, its effectiveness must be determined. To measure effectiveness, a decision is usually made as to what the endpoint or goal should be. In most studies of the effectiveness of both regular and special education, effectiveness is measured by attention to the outcomes of students--at what happens to them once they leave the public school system. The Texas Education Agency began a statewide investigation of these outcomes in 1990. The long-range project is described in this report.

The results to date are preliminary and tentative. They suggest that the evaluation is crucial to answering questions about the effectiveness of the educational system for persons with disabilities. The results also suggest that a comprehensive evaluation will help school districts develop programs which prepare their students to make choices that will enhance their personal growth and lead to productive engagements in their social and vocational worlds.

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BACKGROUND

Senate bill 417, Section 3.05 authorized the Central Education Agency to conduct a study to evaluate

"(1) the effectiveness of special education programs in the state in developing in students the life skills needed after the students leave the public school system;

(2) methods of monitoring the effectiveness of special education programs; and

(3) the appropriateness of essential elements for a required special education curriculum and of basic skills assessment designated for special education programs."

Seven major activities have been undertaken in this evaluation study. This report provides an overview of those activities and describes preliminary findings from data collection efforts to date. The activities include:

- defining life skills;
- reviewing national and state literature on the effectiveness of special education across all disability categories;
- a retrospective study of former students in special education who have exited the public school system;
- a longitudinal study of current students in special education who will be followed through 1994;
- monitoring of special education programs;
- evaluating the transition process from public schools;
- determining implications of the studies for special education curriculum and basic skills assessment.

DEFINITION OF LIFE SKILLS

The term "life skills" is used in various ways by different agencies, consumer groups, and businesses to denote types of skills or abilities presumed to be important to living independently. To achieve some degree of consensus about the kinds of outcomes to measure in this study, it was necessary to establish a definition of life skills that would encompass the major domains usually subsumed under the term. Definitions and perspectives from groups across the state and nation were extensively reviewed. Definitions were obtained from the Texas Planning Council for Developmental Disabilities, education service center (ESC) special education directors, the National Association of State Directors of Special Education, the federal Office of Special Education Programs, ESC consultants for special education, and Texas Education Agency special education program staff. The following definition integrates these perspectives.

For the purpose of this study, life skills are defined as the personal, social and developmental abilities that, through full and integrated development, enable individuals to advance their personal growth, to participate in their community, and to engage in productive social, vocational and educational activities.

Life skills encompass three domains:

Independence, including living arrangements, autonomous use of community facilities, involvement in personal leisure activities, use of public or personal transportation, and emotional and physical health;

integration, including community involvement, friendships with nonhandicapped individuals, and active involvement in group or community leisure activities; and

productivity, including postsecondary education, vocational training, and employment.

REVIEW OF STUDIES ON THE EFFECTIVENESS OF SPECIAL EDUCATION IN DEVELOPING LIFE SKILLS FOR STUDENTS LEAVING THE PUBLIC SCHOOL SYSTEM

To provide a framework for designing the present study, a comprehensive review of methodological advances in program evaluation of special education and state and national research on the effectiveness of special education was conducted.

Introduction

This section summarizes the two major types of studies of special education: outcome studies and program evaluation studies. Most studies were published after 1975 although a few published before 1975 were also included in the review. The disability categories covered include learning disabilities, mental retardation, behavioral/emotional disorders, hearing impairments (including deaf), visual impairments (including blind), physical impairments (including orthopedic impairments), autism, speech handicaps, multiple handicaps, and deaf/blind.

Chapters of this review are divided as follows. After an introduction to the review and a description of the methodology involved in collecting studies and analyzing their data, a chapter on methodologies used in past research on adult outcomes of students in special education describes methodological issues in data collection. Comparisons and descriptions of model studies are made where appropriate. The next seven chapters focus on individual disability categories with speech handicapped, multiply handicapped and deaf/blind combined into one chapter. The last chapter draws conclusions from the information presented previously.

An ERIC search was performed crossing follow-up studies, longitudinal studies, and cross-sectional studies with each of the ten disability categories and any related term. An additional search was performed crossing the ten disability categories and special education with program evaluation. Current issues of those journals frequently cited from the ERIC searches were also surveyed. All articles were reviewed and reference lists checked for additional publications.

Telephone calls were made to ten national researchers to gather current information and/or data. Researchers were contacted in California (Wagner), Washington (Edgar), Oregon (Halpern), Vermont (Hasazi), Colorado (Schipacassse), Iowa (Sitlington), Illinois (DeStefano), and New Hampshire (Lichenstein). In addition, the U. S. Department of Education, Office of Special Education Programs (OSEP) (Halleron, Hebbler) was contacted. Data and general information were received and reviewed.

The tables in the following chapters summarize percentages of youth achieving a certain adult outcome. These percentages are unweighted unless otherwise specified. That is, the value reported in each study was summed regardless of the contributing sample size and divided by the number of studies. The rationale was to equalize the studies so that one would not be weighed more heavily than another. Otherwise, state studies, for example, would account for a larger part of a calculated percentage and reflect an overall value representative of only one state. Occasionally, calculations are performed and presented in this review based on published data.

Methodologies

This section is divided into a number of subsections. The first describes the methodological approaches used in past research on adult transition and issues that are important in designing longitudinal and follow-up studies. The second subsection describes and compares a number of designs used in other state or national studies. The last subsections provide a brief overview of state studies that have been completed or are currently in progress.

Past Methodologies

Two basic methodological approaches to examining the adult outcomes of former students of special education have been used: the follow-up and longitudinal (follow-along) studies. The follow-up methodology is a cross-sectional method in which a group of identified subjects are contacted at one specific point in time. Most of the studies reported in this document are of this type. A longitudinal approach identifies subjects and then assesses them at different points in time. The prospective approach of the longitudinal study (vs. the retrospective nature of the follow-up study) has been adopted by a number of state educational agencies recently, but only a few have collected a first wave of data (e.g., Washington, Iowa, Colorado).

Halpern (1990) reported on methodological weaknesses in prior research on adult transition and provided a number of recommendations. (1) He suggests that the longitudinal study is superior to the follow-up method because of its predictive power in answering such critical questions as the effects of vocational programming. (2) Past studies have generally drawn samples to describe the population studied rather than sampled for explanatory purposes, i.e., to relate adjustment to other antecedent variables. It is important to understand what produces adjustment success. If the study intends to be descriptive, then efforts should be made to ensure that the sample represents the population. (3) Personal interviews and phone interviews are recommended over mail surveys. (4) Previous studies lack uniformity in measurement. For example, earned income has been reported in the following ways: hourly wage, number of hours employed per week, weekly salary, yearly income, and employment stability index. Comparisons across studies are difficult. Identification of a common set of specific outcome variables is recommended. (5) Halpern argues for broad and diverse outcome measures, including social integration, postsecondary education or training and personal/social adjustment, and not just employment measures.

Another difficulty with the current literature is the lack of a control or comparison group. Rates of employment, engagement, postsecondary education participation, and residential status varied considerably even within the same disability category. These outcome factors also vary according to community (e.g., employment rates vary in different areas of the country and in rural and urban communities). Thus, a comparison group matched at least on demographic variables would provide more accurate interpretations of data and conclusions.

Most studies have been outcome studies without referencing the type of program that is being evaluated. Isolated articles in the literature discuss a particular type of program and a few of these have collected outcome data on their specific program. Furthermore, the specificity of what leads to successful outcomes in these studies has not been identified. Process and outcome variables must be carefully coordinated to identify factors that lead to successful (and unsuccessful) outcomes for the special education population. Susan Hasazi in Vermont has been examining such variables in her research.

A few studies have examined the long-term outcome of programs such as former child guidance clinic clients, hospitalized patients, or sheltered workshop participants. These data are presented along with special education student outcomes as a comparison.

Comparison of Other Study Designs

DeStefano and Wagner (1990) from the National Longitudinal Transition Study (NLTS) presented "lessons learned" from a variety of outcome assessment efforts in special education. They identified eight key steps: (1) develop a conceptual framework to guide the assessment; (2) specify comparison groups; (3) design and select a sample; (4) choose appropriate outcome measures; (5) choose appropriate independent measures; (6) selecte data sources and collection methods; (7) choose analysis methods that are appropriate to the data and to the project's information needs; and (8) communicate findings to encourage their use in policymaking and programming.

Some of the state studies focus measurement on student outcomes that are fairly under school influence. These include school achievement, participation factors (i.e., attendance, suspension, withdrawal), school-leaving status, skill levels (i.e., social skills, job skills, independent living skills), and attitudes and perceptions of parents, students, and staff. Measurement of these outcomes provides an overview of how students in special education are faring. Some states also examine context to explain variation such as resource allocation, curricula, instructional practices, characteristics of students and staff, and policies and procedures. Other states are examining the effectiveness of specific programs such as occupational therapy for students with learning disablilities. An assessment of the impact of secondary programs on postschool outcomes entails examining such variables as method of exit, employment status, residential arrangement, satisfaction, and services used. The focus of the outcome assessment is a function of the underlying conceptual framework. The framework provides a structure for understanding, interpreting, and manipulating outcome measures. Explicit delineation of the purpose and goal of the data gathering is required.

Comparisons are important for interpretation. Comparisons can be made with nondisabled youth, among handicapping conditions, or across districts or regions of the state. Comparisons with nondisabled youth are especially important, to investigate the effects of local or state economy or other broad influences.

Sampling considerations are also important, and obtaining a sample large enough to perform certain statistical analyses and to represent the population is critical. Random selection is also required. Sample bias, due to the inevitability of less than 100% response rate, is a factor to consider when final data gathering is complete.

Obtaining data through school records is recommended and is being followed in the current longitudinal study. Data gathering methods such as staff follow-through, use of last known address, and parent interviews are the major vehicles in which to gather data given the high mobility rate of transitional adults.

Measures of process and outcome variables are highly appropriate for describing the adult outcomes of students in special education. These selected measures have been commonly ones used in prior research.

The timing of data collection is important. How much time should elapse between contacts must be determined. As the length of time increases, the more difficult it is to attribute outcomes to the effects of schooling. Over time, records are lost, persons are harder to locate, perceptions of school fade with time, etc. Such considerations point to the need for measuring outcomes soon after school exit--within six months to a year, and yearly thereafter.

State Study Reports

A few statewide studies have appeared in the literature from Washington (Edgar & Levine, 1987; 1989; this latter paper presents data from the first wave of a longitudinal study), Iowa (Frank et al, 1990; Iowa Department of Education, 1989a; b; 1990), Vermont (Hasazi et al, 1985a; b; 1989), Colorado (Mithuang et al 1985) and Florida (Fardig et al, 1987). The Cypress-Fairbanks (Texas) Independent School District (1989) also produced an unpublished manuscript on transition of their special education population.

Active State Longitudinal Studies

The Office of Special Education Programs (OSEP), already stated, is currently funding a number of statewide longitudinal studies. These states include: Kentucky, Iowa, Michigan, Vermont, Colorado, New Hampshire, Washington, Oregon, Nevada, Minnesota, Utah, North Carolina, Kansas, Delaware, Hawaii, and Florida. In addition, the NLTS is being conducted by SRI International in California. Bill Halleron at OSEP is the project coordinator for the statewide transition studies. Mary Wagner is the director of the NLTS.

Learning Disabilities

Fifteen studies on the adult outcomes of students with learning disabilities were found. Two mixed students of differing handicapping conditions making specific interpretation difficult. Eight included graduates only; three studies sampled dropouts only; the remaining two included graduates and dropouts. The studies include state and national studies. Of the studies reporting gender distribution, an average of 71% male was obtained.

Dropout Rates for Youth with Learning Disabilities

The dropout rate for students with learning disabilities averaged 38% over seven studies. Included in this list of studies was the National Longitudinal Transition Study (NLTS, 1989) which sampled 533 students and found a dropout rate of 36%. This rate was similar to state studies of mild handicapping conditions in Vermont (Hasazi, Gordon & Roe, 1985) and in Florida (Fardig, Algozzine, Schwartz, Hensel & Wesling, 1985). Three other state studies, two in Washington (Edgar, 1987; Edgar & Levine, 1987) and one in Iowa (1989), found rates of 42%, 29%, and 18%, respectively. Two studies were in urban areas (Levin, Zigmond & Birch, 1985; Zigmond & Thornton, 1985) and had a combined dropout rate of 47%. One study with a rural sample showed a dropout rate of 36% (deBettencourt, Zigmond & Thornton, 1989). By comparison, the nondisabled youth dropout rate falls at about 25%.

Table 1 presents a summary of critical outcome variables grouped according to the sample studied: graduates, dropouts, or both. In addition, a summary of three studies including rural samples is presented.

Table 1

Mean Percentages of Critical Outcome Variables

Sample	N	Employed	Any Post-Secondary	Unengaged	Lives w/ Parents	Lives Indep.
Grads	8	71 (7)	28(17)	19 (6)	71(11)	22 (7)
Drops	3	58(30)	17(10)	48(23)	66 (3)	23 (6)
Gr/Dr	2	70(18)	17 (0)	16 (5)	71 (0)	22 (0)
Rural	3	74 (6)	8 (0)	12 (0)	54 (0)	25 (0)

Notes: Standard deviation is in parentheses. Gr/Dr refers to studies mixing graduates and dropouts. N refers to number of studies. Unengaged refers to adults who are neither employed, attending postsecondary education, nor receiving vocational training. Indep. refers to living independently. Means and standard deviation were derived such that studies were equally weighted regardless of sample size. Not all cells are based on the number of studies suggested by N.

Employment

Graduates with learning disabilities show an average employment rate of approximately 70% (Cy-Fair Independent School District, 1989; deBettencourt, Zigmond & Thornton, 1989; Edgar & Levine, 1987; Edgar et al, 1988; Haring et al, 1990; Hartzell & Compton, 1984; Humes & Brammer, 1985; Iowa Department of Education, 1989; NLTS, 1989; Scuccimara & Speece, 1990; Schalock, Wolzen, Ross, Elliot, Werbel & Peterson, 1986). (Since the graduate and graduate/dropout samples revealed similar results, they will be combined in the following discussion.) The range of employment rates varied from 57% (NLTS) to 89% (Scuccimara & Speece, 1990). The standard deviation of 7 for the graduate studies, however, indicates fairly consistent employment rates for these individuals. Higher employment rates were associated with the number of years of follow-up. That is, the older the former student, the higher the employment rate. For example, Scuccimara & Speece (1990) assessed students five years after exit from high school and found an 89% employment rate. In the Washington state longitudinal study (1989), the employment rate was 65% at six months but 75% after two years. An 80% rate was found in the deBettencourt et al (1989) rural sample after 1½ years. Male employment rates were generally higher than female, a finding that applied across handicapping conditions except for the most severe.

Dropouts had an employment rate of 58% but studies varied widely in reported rates. The Iowa state study (1987) found a dropout employment rate of 57%, Washington (Edgar & Levine, 1987) 29%, and 89% in a study of rural youth (DeBettencourt et al, 1989). The later study's rate was based on an N of 9; Washington an N of 94; and Iowa, a sample of 182. The weighted mean rate of these three studies is 49%. Hasazi et al (1985) found a 51% employment rate for dropouts with mild handicapping conditions. [Although the NLTS did not report employment figures for dropouts only, an employment rate for dropouts can be extrapolated assuming a 70% rate for graduates and their 57% rate for graduates and dropouts together. The calculated rate of 34% is similar to Washington's dropout employment rate.]

These youths tend to have entry level jobs primarily as laborers and service workers but also as craftsmen for males and service and clerical workers for females. It is extremely difficult to distinguish between full-time and part-time workers and to decipher average wage or salary because of the different reporting methods. Approximately one-half to two-thirds of graduates work full-time. An average salary is about $95 per week (most studies were conducted in the mid-1980s) and hourly wage is approximately $4.50. There is little difference between earnings of employed graduates and dropouts.

Unemployment Rates

Unemployment rates for six studies were available and averaged 21%. Rural areas had an unemployment rate of 15% while the unemployment rate of the remaining three studies was 26% (13%, Scuccimara & Speece, 1990; 31%, Iowa Department of Education, 1989; and 33%, Edgar & Levine, 1987). [The study with the 13% rate was a five-year follow-up of graduates of a work-study program.] The national unemployment rate for 18-24 year olds is 13% (1985).

Postsecondary Education

Another productive path into adulthood besides paid employment is postsecondary schooling. Ten studies reported whether students participated in any postsecondary education. Twenty-seven percent of the graduates (36%, excluding rural studies) participated in some form of postsecondary education (Edgar & Levine, 1987; Edgar et al, 1988; Haring et al, 1990; Hartzell & Compton, 1984; Humes & Brammer, 1985; Iowa Department of Education, 1989; Schalock et al, 1986). This compares to a 56% rate for nondisabled youth. Dropouts engage in very low levels of postsecondary education: 17% (National Longitudinal Transition Study, 1989; Edgar & Levine, 1987). Eight percent of rural graduates participated in post high school education (Humes & Brammer, 1985; Schalock et al, 1986).

Lack of Engagement

Seven studies presented unengagement data (Cy-Fair Independent School District, 1989; Edgar & Levine, 1987; Edgar et al, 1988; Haring et al, 1990; Humes & Brammer, 1985; Iowa Department of Education, 1989; NLTS, 1989). Engagement refers to an individual being involved or "engaged" in some kind of productive activity, usually work or school. For graduates, the unengagement rate was 18-19% while for dropouts, the (unweighted) rate was 48%. This latter figure was based on two state studies with widely divergent rates of 64% (Washington) and 31% (Iowa). The weighted rate for dropouts would be 42%.

Living Arrangement

Living arrangements tend to be defined as living at home (or with parents), living independently, or other. The "other" category typically includes living in group homes, adult foster homes, or public or private facilities. While there may be differences between the status of adults living with their parents or with other relatives, this type of distinction has not been made in the past. The present longitudinal study will attempt to make some of these finer distinctions.

There was very little variation between graduates and dropouts in terms of living status (Cy-Fair Independent School District, 1989; Edgar & Levine, 1987; Edgar et al, 1988; Haring et al, 1990; Iowa Department of Education, 1989; Schalock et al, 1986; Scuccimara & Speece, 1990). Approximately 70% lived with their parents or a close relative while 22-23% lived independently. Approximately 8-10% were married and included as living independently.

Social Adjustment

Data on social factors are limited and not presented consistently. Hartzell & Compton (1984) rated students with learning disabilities on a 3-point measure of social success. High social success was defined as having friends, leadership qualities, and the facility for interpersonal relationships. Low social success was defined as having feelings of loneliness, isolation, and social awkwardness. Medium social success was considered having a few friends but being uneasy in groups. Fifty-three percent of their sample fell into this medium category with 31% rated as high. In analysis of their qualitative data, Haring et al (1990) found that the average number of activities listed per subject was low (two for men and one for women). Nonetheless, 75% of the women and 80% of the men reported being satisfied with their social lives. Scuccimara & Speece (1990) constructed a social activity index, i.e., a percentage of seven listed activities (watching TV, going to church, going to the movies, having a hobby, participating in sports, going to a recreation center, hanging out). Excluding watching television, which all subjects did, 28% engaged in two or less activities. Only one of 56 respondents participated in all seven and 15% participated in six. A majority were satisfied or very satisfied with their social life (66%) and nearly all were able to list at least one friend while 84% could list two friends.

Two studies reported transportation use. In particular, the studies reported 45% and 69% of youth with learning disabilities having a driver's license.

No outcome study has detailed the social adjustment of dropouts. Two state studies have compared satisfaction levels between graduates and dropouts. The Iowa study (1989) asked graduates and dropouts to rate how helpful school was in preparing them for finding a job, keeping a job, getting along/dealing with personal problems, reading things like newspapers, taking care of children, and budgeting money/understanding taxes and insurance. Whether employed or not, more graduates rated their school as helpful or very helpful more often than did dropouts (82% v. 57% across the six dimensions). One may infer that these satisfaction ratings reflect higher ability to perform these functions. The Washington state study (Edgar, 1987) looked at high school program satisfaction and problems with the law. Comparable figures for graduates and dropouts for these two dimensions, respectively, are: 47% v. 22% very satisfied with their high school program and 6% v. 32% reported problems with the law.

Studies Comparing Youth With and Without Learning Disabilities

Studies that provide a control group of non-learning disabled youth put the findings of youth who are disabled into perspective. Such studies control for sampling errors. Three such studies exist (deBettencourt et al, 1989; Hartzell & Compton, 1984; White, Alley, Deshler, Schumaker, Warner & Clark, 1982). In all three studies, which measured outcome variables pertaining to employment, graduation rate, college attendance, social success, community adjustment, and high school program satisfaction, non-learning disabled youth out-performed youth who were disabled. While it is well documented that young adults who are learning disabled have underperformed their non-disabled peers on high visibility measures such as employment rates, occupational status, graduation rates, and postsecondary education attendance, the control studies documented that non-disabled youth are also more satisfied with their employment and high school education (White et al, 1982) and with their social success (Hartzell & Compton, 1984). They are more active in social or fraternal groups, recreational activities and community clubs, and they have had fewer problems with the law (White et al, 1982).

Predictors of Success

Of particular interest to educators are factors that predict successful outcome. This section is divided into two subsections. One subsection reports results from outcome studies and another reports findings from program evaluation studies. The latter includes evaluation of employment programs, such as vocational programs, and educational variables and their relationship to post-secondary participation.

Outcome study predictors.

Several studies tried to predict employment, academic success, or social success of youth with learning disablities. This area of prediction is hindered by the lack of theoretical models to guide research. Thus, many studies examine variables other than demographics.

Employment. Males consistently attained higher employment rates than females across all studies. Higher rates of employment were also consistently associated with high school graduation (see Table 1).

The age of the student when graduating from high school was associated with higher employment rates. Age correlated with number of years out of high school but a ceiling effect would likely occur after two to five years.

A few studies attempted to examine whether specialized vocational education had any effect on outcomes (Cy-Fair Independent School District, 1989; Hartzell & Compton, 1984; Humes & Brammer, 1985; Iowa Department of Education, 1989; NLTS, 1989; Scuccimara & Speece, 1990). The Cy-Fair ISD found verbal intelligence and having a job in high school to correlate significantly with employment stability (R2 = .17) and verbal intelligence with later employment (R2 = .07). Hartzell and Compton (1984) found job success (defined by parent ratings) was related to current age and intelligence (R2 = .22). Scuccimara and Speece (1990) found approximately 85% of their sample who held summer jobs in high school to be employed compared to 55% of those who did not hold a high school summer job. Humes and Brammer (1985) reported an 82% employment rate and 100% engagement rate of students who received some form of vocational-technical training. Although these rates are higher than for those without this training, calculations performed for this report revealed that the difference was not significant. The Iowa Department of Education examined the effects of its future programs and found no significant association between employment status and enrollment in either regular or specially-designed vocational programs while in school. A significant association was found between a paid job during high school and post-school employment for graduates. The NLTS (1989) grouped students with learning disabilities, emotional disorders, and speech impairments in a logistic regression on employment status. This combined analysis revealed no significant contribution by IQ or age. However, significant contributions were made by being male, the head of household being employed, living in an urban area, having a low county unemployment rate, and by functional ability (parent's rating of whether youth can count change, tell time, read common signs, and look up names in a phone book and use the telephone). These results are difficult to interpret for persons with learning disabilities because of the disability groups were combined with no indication about how these groups differ along predictor variables.

Hasazi and her colleagues in Vermont (1985, 1989) have presented the most useful data regarding prediction of later employment. However, most of her analyses combine differing mild handicapping conditions, particularly learning disabilities, emotional disturbance, and mild mental retardation. In the 1985 study, current employment was significantly associated with being male, living in an urban area and resource room (v. special class) programming in high school. (This latter variable, however, masquerades as a level-of-functioning variable.) Employment was also related to high school graduation, receiving vocational training (but not work experience), and having a part-time and/or summer job during high school. Higher wages were associated with having a summer job during high school. Percent of time employed since high school was associated with being male, being in resource classes, graduating, and having a part-time and/or summer job during high school. In the 1989 study, vocational education correlated with employment status after the first year but not the second, while paid work during high school was related to employment only after two years.

Combining the results of Hasazi's work with those from the NLTS and the studies specific to the learning disabled suggests that paid work experience of any kind during high school is associated with higher levels of employment in early adulthood. It is not clear whether has any specific benefit primarily because vocational programming is confounded by level of functioning or ability. A reasonable approach to determining possible benefit would be to offer differing levels of vocational education to similar students or the same vocational education program to dissimilar students and then measure for differential effectiveness.

Relatively unexplored are the effects of socioeconomic status (SES), especially parents' education, occupation, and employment stability. O'Conner and Spreen (1988) extracted data from a longitudinal study to examine the relationship between parents' SES and the occupational and academic outcomes of children with LD. The father's SES and education correlated with five-year employment stability and the mother's education was associated with the child's SES (based on occupation, income, and educational status). A child's IQ at age 10 correlated highly with later educational and occupational outcomes, especially salary. The correlation between intelligence and employment status was found in the two LD studies cited above.

Educational attainment. This subsection will deal with predictors of educational and academic success. Factors associated with dropping out of school will also be covered.

Three studies examined predictors of educational or academic success (Cy-Fair Independent School District, 1989; Hartzell & Compton, 1984; and NLTS, 1989). The Cy-Fair ISD found verbal intelligence and manner of exit from high school to significantly correlate with completing at least one semester of postsecondary education. In addition, staying in college (v. dropping out of college) was significantly associated with years since leaving school and father's education. General intelligence was not associated with college continuation. Academic success, as rated by parents in Hartzell and Compton's study, was significantly predicted in a regression model ($R^2 = .35$) by general intelligence ($r = .42$) and high family functioning (rated on a three-point scale: chaotic, some problems, cohesive; $r = .46$). The NLTS again combined the catagories learning disabilities, emotional disturbance, and speech impaired in a regression analysis and found head of household education, high school graduation, social integration, and functional ability to be related to postsecondary participation. IQ, as measured by student's school, was uncorrelated.

These three studies indicate that head of household education is an important factor in educational achievement for youths who are learning disabled. This relationship also holds true for nondisabled youth (cf. Jencks, 1980). Intelligence was associated with educational attainment in two of the three studies. IQ accounts for 25% of the educational achievement variance in nondisabled youth (Matarazzo, 1975). Intelligence, as measured in the NLTS (i.e., reported by school) is not highly reliable but does correlate highly with academic achievement scores. The Cy-Fair study found no relationship between reading or math level and educational attainment. It may be that the NLTS measure of IQ is an achievement score and hence explains its lack of contribution to educational attainment and also employment status (see above section). Social integration (fitting into a group) was associated with educational attainment in the NLTS study which implies that social skills are required to suceed in a postsecondary environment. A cohesive family unit may be associated with educational achievement particularly if it reflects family supportiveness. However, family cohesion may also be correlated with other factors, such as SES, that relate to educational attainment. Additional investigation into family variables and the role of SES on educational attainment in youth with learning disabilities is warranted.

Social success. In the Hartzell and Compton study, parents rated social success on a three-point scale (high - many friends, leadership qualities, facility for interpersonal relationships; medium - a few close friends but uneasy in a group; low - feelings of loneliness, isolation, social awkwardness). Regression analysis revealed general intelligence ($r = .35$) and psychosocial functioning of the child (at about age 9, 3-point Likert-type ratings were made about friendship patterns, cooperativeness, and mood; $r = .44$) significantly predicted ($R^2 = .30$) social success. The degree of disability and counseling received were negative influences on social success.

Program Evaluation Research

Employment. Two studies examined intelligence and/or personality patterns of successful versus unsuccessful employment (Faas & D'Alonzo, 1990; Faas, D'Alonzo & Stile, 1990). In both studies, intelligence was significantly associated with whether youth with learning disabilities were successfully employed. A "persister" personality pattern was defined by dedication, conscientiousness, and cautiousness, being observant yet somewhat rigid in thinking, was also associated with employment status.

In terms of vocational programs designed for students with learning disabilities, Gill and Edgar (1990) described their successful Pierce County Vocational/Special Education Cooperative. The program improves job entry capability and postsecondary educational opportunity for students with mild handicaps by facilitating partnerships between vocational and special education. Staff development includes a 3500-item instructional materials center, the providing of at least 30-hour training programs for local vocational and special education personnel each calendar year, awarding ten to fifteen 30-hour internships with industry each summer, and various process models relating to vocational education assessment, individual education plan collaboration, etc. On-site consultation is also provided. There is continuous staff and administrator communication emphasizing preplacement planning, IEP collaboration, instructional support, and postplacement planning. Comparisons were made with similar students who had graduated during the three years prior to implementation of this program and a cohort of students with mild handicaps in regular programming. Results showed the specialized program group had higher employment, postsecondary enrollment, and engagement rates than the baseline and the regular program groups.

Another study examined rural female dropouts with learning disabilities (Bastian, 1982) and the effects of a course for "enhancing the chances for integration." Such a course produced a short-term effect in effecting unemployment risk with a tendency toward quick resignation and a return to traditional female roles.

Educational Attainment. Miller, Snider, and Rzonca (1990) examined the association between 55 high school variables and postsecondary education participation. Involvement in extracurricular activities (athletics, music, speech/drama/debate), use of community resources after high school (vocational rehabilitation services, community college, and advice from school personnel), intelligence, and reading and math grade equivalence scores were important factors that differentiated among those participating in postsecondary education during the year after high school. Students who are more successful in school are more likely to continue after high school. Interestingly, no vocational educational programs were associated with postsecondary education participation.

The NLTS (1989) examined the effects of background factors on failing grades in high school, dropping out, and attending in postsecondary education. All three variables correlate with each other. Factors

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associated with receiving a failing grade are being male, young (16 vs. 18 years old), having a high absenteeism rate, having discipline problems, and being mainstreamed for a high number of classes. Dropping out was associated strongly with failing one or more courses and being a discipline problem. It was also associated with high absenteeism, not being socially integrated, having lower IQ (80 vs. 100), being a minority, and not receiving tutoring assistance. Postsecondary attendance was correlated with high school graduation, head of household education, and social integration. In sum, students with learning disabilities who perceive school as a failure experience, who have behavior problems, and who are not socially integrated tend not to make the transition to postsecondary education.

Conclusions

The employment rate of recent high school graduates who are learning disabled (70%) is similar to the national rate for nondisabled youth (62%; Borus, 1984). About 49% of non-college bound, high school male graduates and 42% of female graduates were working full-time one to two years after high school (William T. Grant Foundation, 1988). Many of the studies reviewed did not break down employment into full-time and part-time components, but approximately two-thirds are working full-time (NLTS, 1989). Given the employment rate of 70%, 47% of youth with learning disabilities are employed full-time, again similar to national estimates. Despite these employment estimates, youth with learning disabilities are in positions that are entry level and low paying. Salary comparisons with nondisabled young adults are not available but youth with learning disabilities may be at a disadvantage over time and prone to underemployment due to their lower rate of attendance in postsecondary educational institutions (respectively, 28% v. 56%, Jones et al, 1986). Long-term follow-up, preferably of a longitudinal nature, will clarify the employment outcomes of persons who are learning disabled and those who are not. Age correlates with employment status at least within a few years of high school exit, and future studies could examine employment rates after five to ten years.

Educational experiences are frustrating for youth who are learning disabled. Their dropout rate is high (38% v. 25% for nondisabled youth); only 28% attempt postsecondary education (vs. 56%); and most do not have the study skills, reading and math levels, or academic coping skills to persevere through a four-year college career. These characteristics place them at distinct disadvantage in a competitive society and place them at risk for a stressful social, emotional, and health life adjustment. Their high dropout rate is already indicative of that stress.

Future outcome studies on youth who are disabled should differentiate dropouts and graduates. Although rate of pay is similar, rates of employment and engagement differ. High school program effects may be more clearly seen a few years post-exit, especially in social domains between these two groups.

Predictive factors for occupational and educational attainment are few. Those that are clearly related are also predictive of nondisabled youth, namely, being male, graduating from high school, parents' SES, and intelligence. Other factors for adult employment include paid work experience in high school and possibly specialized vocational education. Other factors affecting educational attainment include social integration, a lack of behavior problems, and being successful in school. There are likely other predictive factors that have not yet been identified. It is also likely that no single factor will account for a large percentage of the variance on any outcome measure.

These results hold the following implications.

1. The factors that prevent females from achieving higher rates of employment and postsecondary education warrant study. In a personal communication with Susan Hasazi, she remarked that females in her studies are only partially socialized to work and that they do not fully believe that they should be working.

2. A considerable amount of effort should be directed towards the development of programs aimed at reducing the dropout rate for students with learning disabilities and making school a successful experience in spite of low intelligence and/or academic achievement skills. This is particularly true for poor and minority youth. Specific factors that contribute most to dropout should be identified for these two groups. Programs should then be developed accordingly. High school graduation is associated with educational and occupational achievement, and every effort to engage youth to finish high school should be made.

3. Programs should direct youth with learning disabilities to work for pay during high school. Functional job skills training and preparation are a must.

4. Programs should be developed to teach study skills and academic coping skills to those youth who plan to attend a postsecondary educational institution to increase their chance of success and reduce their academically-related problems and frustrations.

5. Particular attention should be paid to the behavior of students with learning disabilities. Behavior management programs should be developed, most likely in conjunction with a school psychologist, to reduce negative behaviors in the school setting.

6. Social skills should be a part of the curriculum to improve social integration and getting along with others--skills that go beyond employment and formal education.

7. Students with learning disabilities should be provided systematic instruction to expand vocabularies, develop mnemonic devices, improve comprehension, and broaden social knowledge.

Mental Retardation

Twenty-one outcome studies pertaining to students with various degrees of mental retardation were uncovered in the literature. The studies include reports from ten state studies and the NLTS. Sixty-two percent of subjects were male. Like the discussion of students with LD, a distinction was made between studies that sampled high school graduates, dropouts, and both. In addition, a distinction is made between mild mental retardation (MR) and moderate to severe MR. Table 2 presents a summary of these studies.

Table 2

Mean Percentage of Various Outcome Measures

Sample	N	Employed	Any Post-Secondary	Unengaged	Lives w/ Parents	Lives Indep.
Grads:						
Mild	9	44(18)	14(10)	42(14)	69(11)	18 (9)
Severe	6	20(11)	8(11)	36(20	62 (9)	6 (4)
Drops	3	16 (5)	-	59 (5)	71(22)	26(17)
Gr/Dr	5	33 (8)	6 (1)	45(10)	72(21)	10 (1)

Notes: See Table 1. Because outcomes tend to differ between mild retardation and severe/profound retardation, these two categories are presented separately, when data are available.

Dropout Rates

Eight studies provided an average dropout rate of 20% (SD = 10%). The rates ranged from a high of 34% (NLTS) to a low of 8% (Cy-Fair Independent School District, 1989; Iowa Department of Education, 1989b). The 20% figure may reflect an underestimate of the dropout rate. Both Cy-Fair ISD and Iowa Department of Education have high quality special education departments, and this may account for their low dropout rates. The exclusion of these two studies reveals a modified dropout rate of 24% (SD = 8%). All but one of the remaining studies (Brolin, Durand, Kromer & Muller, 1989) were state studies (Edgar, 1987; Edgar & Levine, 1987; Hasazi, Gordon, Roe, Hull, Finck & Salembier, 1985; Fardig, Algozzine, Schwartz, Hensel & Westling, 1985). By comparison, the nondisabled youth dropout rate is approximately 25%.

Employment

A summary of ten studies of high school graduates who have mild mental retardation shows that 44% were employed one to two years after exit. However, there was considerable variability across studies. Rates varied from 10% (Haring & Lovett, 1990) to 58% (Frank, Sitlington, Cooper & Cool, 1990). The NLTS found an employment rate of 52%. Rural samples (Fardig et al, 1985; Schalock et al, 1986) tend to have employment rates in the mid-50s (%). State studies show an employment rate in the 40s (49% and 43%, Edgar & Levine, 1987; Edgar et al, 1988; 46%, Hasazi et al, 1985; 48%, Iowa Department of Education, 1989b). Edgar (1987) found a 13% rate of employment. Some of the variability is a function of the way in which the employment rate is calculated. Exclusion of the two low estimates, which are significantly different from the rest, however, yields an employment rate of 51% (SD = 5).

The employment rate of 20% for youth with moderate, severe and profound MR is less than half that of their mild MR counterparts. Again, there was considerable variability [5% (Haring & Lovett, 1990), 12% (Wehman, Kregel & Seyfarth, 1985), 22% (Frank et al, 1990), 23% (Iowa Department of Education, 1989b), 25% (Schalock et al, 1986), and 35% Edgar et al, 1988)], but a best estimate is the low 20s.

The mean percentage employed for dropouts based on three studies was a disturbing 16% with low variability (Edgar, 1987; Edgar & Levine, 1987; Iowa Department of Education, 1989b). Studies that included both graduates and dropouts for all forms of mental retardation (Brolin et al, 1989; Cy-Fair ISD, 1989; Hasazi et al, 1985; NLTS, 1989; Wehman, Kregel & Seyfarth, 1985) yielded an employment rate of 33% (SD = 8), a figure lying between the graduate and dropout rates. By comparison, the NLTS employment rate for those who exit high school with mental retardation was 32%.

Types of employment for students with MR, like their LD counterparts, tend to be in entry level and low pay positions. They follow the same job patterns, in which males find employment in labor and service occupations while females are employed in primarily service but some clerical occupations. Their wages are lower than youth who are learning disabled ($3.68 per hour vs. $4.50 per hour, respectively), and weekly salary varies from $35 to $95 with an average of around $75.

Unemployment rates

The unemployment rate for young adult graduates with mild mental retardation was 23% (SD = 8). For the moderately to severely retarded graduates the rate was comparatively higher at 40% (SD = 27). The latter estimate was based on four studies with widely divergent findings (10%, Frank, et al 1990; 33%, Schalock et al 1986; 40%, Iowa Department of Education; 79%, Wehman et al, 1985). However, this was in line when the graduate/dropout sample rate of 29% was considered (Hasazi et al, 1985b).

Unengagement

Eight studies presented data about engagement of youth who are mentally retarded (Cy-Fair ISD, 1989; Edgar, 1987; Edgar & Levine, 1987; Edgar et al, 1988; Hasazi et al, 1985b; Iowa Department of Education, 1989b; Linden & Forness, 1986; NLTS, 1989). Forty-two percent (SD = 14) of graduates with mild MR were unengaged compared to 36% (SD = 20) for those with moderate to severe MR. At first glance a lower engagement for persons with milder handicapping condition seems backwards but the result is accounted for by a greater involvement in shelters or supervised settings for the more disabled. The unengagement rates of 59% (SD = 5%) for dropouts and 45% (SD = 10%) for graduates and dropouts combined is exceptionally high.

Postsecondary Education

A number of studies included postsecondary education as a meaningful outcome variable. These studies included both college attendance and vocational or job training. Seven studies tabulated the percentage of graduates with mild mental retardation (Edgar, 1987; Edgar & Levine, 1987; Edgar et al, 1988; Frank et al, 1990; Haring & Lovett, 1990; Iowa Department of Education, 1989b; Schalock et al, 1986) and five studies for those with moderate to severe retardation (Edgar et al, 1988; Frank et al, 1990; Haring & Lovett, 1990; Iowa Department of Education, 1989b; Schalock et al, 1986). These rates are presented in Table 2 and are 14% (SD = 10) and 8% (SD = 11), respectively. These rates reflect primarily vocational or job training. Graduates and dropouts with mental retardation attend postsecondary training at the rate of 7% (Hasazi et al, 1985b; NLTS, 1989). Averaging across all studies yields a postsecondary attendance rate of 11%.

Living Arrangement

Approximately 70% of young adults with mental retardation live with their parents within the first few years after exiting high school. This rate consistently held true and did not vary as a function of manner of exit from high school.

Living independently for these youth varied markedly. For students with moderate to severe retardation, living independently was relatively rare; only 6% achieved that status (Edgar et al, 1988; Frank et al, 1990; Haring & Lovett, 1990; Iowa Department of Education, 1989b; Kregel et al, 1986). Many of these youth (34%) lived in alternative residences such as supervised apartments or group homes.

Graduates with mild MR achieved an independent living rate of 18% (SD = 9%; Edgar & Levine, 1987; Edgar et al, 1988; Frank et al, 1990; Haring & Lovett, 1990; Iowa Department of Education, 1989b; Linden & Forness, 1986; Schalock et al, 1986), dropouts 26% (SD = 17; Edgar & Levine, 1987; Iowa Department of Education, 1989b) and a combined rate for graduates and dropouts of 10% (SD = 1; Hasazi et al, 1985b; Kregel, Wehman, Seyfarth & Marshall, 1986; NLTS, 1989). The combined rate for graduates and dropouts showed little variability but is much lower than the rates for dropouts and graduates. The rate for dropouts is based on only two studies, one of which obtained a 38% independent living rate for dropouts (Iowa). The other dropout rate was 14%, more in line with the other rates. The 18% graduate rate showed moderate variability based upon length of time out of school. Two studies assessed graduates one to five years after school exit while a third followed graduates after twenty-five years. The combined rate for these three studies was 23% (SD = 3) with a high of 25% for adults who were diagnosed as mild MR and previously psychiatrically hospitalized in childhood (Linden & Forness, 1986). Exclusion of these longer follow-up studies leaves an independent living rate for graduates with mild MR of 13%, similar to the combined and dropout rates (excluding Iowa).

Social Adjustment

Kregel et al (1986) reported that the majority of social activities and interpersonal relationships focused on passively oriented activities occurring within the confines of home. About 60% preferred spending time with their families, 22% with friends (28% mild MR, 12% moderate/severe MR), and 3% alone. Close to 60% spend much of their free time with persons with no disabilities. While most watch television and listen to music, few engage in sports-related activities and group memberships. Passive activities like going to the movies or sporting events were attended by 40%. Eighty percent reported being somewhat or very satisfied with their "present situation."

Frank et al (1990) reported that 90% of program graduates in Iowa were involved in some type of leisure activity with about one-half of graduates with mild MR engaged in four or more activities (compared to one-fourth to one-third of moderate to severe MR). Socializing with family and friends was the activity of choice of higher functioning individuals while listening to music was the favorite pastime of lower functioning persons. Similar results were obtained in the Iowa state study (1989b).

Haring and Lovett (1990) reported 50% of their sample of 58 persons with mild, moderate, and severe MR received supplemental security income and 43% Medicaid. Only one had a driver's license, 38% rode the bus, 17% depended on friends or family, and 29% depended on agency staff for transportation. The variety of recreational and social activities were limited. Only one had trouble with the law. Another study (Edgar & Levine, 1987) reported 7% of persons with mild handicaps had trouble with the law.

The Iowa Department of Education (1989b) calculated a "success" measure for their graduates who received special education. Only 4% were deemed successful based on the following criteria: not employed but were meaningfully engaged otherwise, living independently with parents, relatives or friends, paying at least a portion of their living expenses, and involved in more than one activity.

Comparisons Between Youth With and Without MR

Only two studies compare youth with and without MR. Peterson and Smith (1960) compared 45 educable mentally retarded adults (Mean IQ = 65) with 45 nonretarded persons (mean IQ = 103) at age 24. No data were presented but the authors reported the following: (1) the majority of adults with MR left school by age 16 while 93% of the comparison group graduated; (2) more comparison group members found employment immediately upon school exit, held their current positions longer, and earned higher wages (about double); (3) ten times more comparison group members owned homes, were two to three times as likely to be married, were four times as likely to belong to a PTA or other fraternal organization, had about twice the registered voters, were more likely to have a driver's license, and participated in more social activities. In the University of Washington longitudinal study (Edgar & Levine, 1987) of persons with handicaps, a nonhandicapped cohort of 107 was included for comparison. While 43% of their mild MR sample was employed, 64% of the handicapped cohort was currently employed. There was no difference in number of hours worked per week between the two groups. The nonhandicapped group earned a significantly higher salary, were significantly more likely to be participating in postsecondary education, and had only 6% unengaged versus 49% for the MR group. Similar rates of family dependence, having at least one friend, and problems with the law were noted.

Predictors of Outcome

This section summarizes those variables that are associated with and hypothesized to predict successful outcomes for adults with mental retardation. Two subsections will be presented below describing results from follow-up and program evaluation studies.

Outcome Studies

Employment. Brolin et al (1989) performed a Chi-square analysis examining the relationship between a number of variables and vocational adjustment rated on a 3-point scale (average or better, fair, poor). Those students who had a work-study experience had a significantly better overall degree of vocational adjustment than those who took the regular academic program. More females than males had higher levels of vocational adjustment. Age, IQ, marital status, high school graduation, months out of school, months in regular or special education living arrangements were uncorrelated with adjustment.

O'Callaghan and Toomey (1983) found employment to be positively and significantly related to age and the lack of a physical disability. Open (or competitive) employment (versus sheltered) was associated with younger age, higher IQ, the lack of a physical disability, and not having work training. Income correlated significantly with age and sex (being male). A higher percentage of females were in unskilled positions.

Haring and Lovett (1990) also found age to correlate with employment or involvement in an employment-related placement. Fardig et al (1985) found employment stability (since leaving school) to be lower for females, lower for persons with MR than persons with learning disabilities, and unrelated to age.

Frank et al (1990) found employment rates higher for males than for females with mild and severe MR. They found no effect of specialized vocational training or work experience on employment outcomes across four levels of severity of MR. Regular vocational education for adults with mild MR led to a higher employment rate. Paid experience was positively associated with employment for one group with an average IQ of 73 and who attended some regular education classes in high school.

The Iowa Department of Education (1989b) found no significant association between current employment status and enrollment in either regular or specially-designed vocational programs, work experience, or paid employment during high school across all levels of handicap and for both graduates and dropouts.

Hasazi et al (1985b) found current employment significantly related to gender (male > female), handicapping condition (educable > trainable MR), and paid work experience in high school (yes > no). Employment status was unrelated to location (urban vs. rural), manner of high school exit (graduate vs. dropout), work experience in high school, or current residential status. Vocational education was marginally related to employment status. Higher wages were earned by those who had high school work experience, those who held a part-time job during high school, and those who did not attend vocational classes.

Factors affecting current employment of out-of-school persons who are considered educable mentally retarded from the NLTS (1989) were determined by regression analysis. Employment was significantly associated with being male, having higher functional ability (rating of telling time, counting change, reading signs, using the telephone book), having no sensory or physical disabilities, not living in a single parent household, not having a speech disability, and having higher IQ.

Educational Attainment. No study examined factors associated with postsecondary education. The NLTS, however, examined factors affecting dropout behavior and the receipt of failing grades. EMR students were significantly more likely to receive a failing grade if they were frequently absent, did not have a job in the past year, were a minority, and were younger. High school dropout was associated with receipt of a failing grade, exhibition of negative behavior, absenteeism, being young and male.

Residential Status. Hasazi et al (1985b) examined correlates of residential status. Status was indicated by living in parents' home, in a mental health system facility, or independently. Status was significantly associated with gender (more males lived at home while more females lived independently), handicapping condition (more EMR adults lived at home and more TMR adults lived at an agency facility), and marital status (marrieds lived independently). More females lived independently due to marriage.

Program Evaluation Studies

Employment. Chaffin, Spellman, Regan and Davison (1971) followed EMR students who participated in the Kansas Work-Study program. Results showed that the program affected employment three years after high school exit but not five years later. Students who participated in the program, however, were graduated more often, held their jobs longer and earned more money when compared to a no-program group. Perotti (1985) examined three methods of vocational training for EMR students in rural New York State and measured outcomes two to six years after graduation. Former students who had attended resource room programs with no vocational education experienced difficulty in work and social adjustment. Those who attended vocational/technical training programs exhibited higher levels of independent living, and the work-study program participants showed the best employment adjustment.

Evaluation of a transitional training program for mentally retarded, multiply handicapped high school students showed that students who participated in the program utilized vocational rehabilitation services more often than those who did not participate in the program (O'Brien & Schiller, 1979). An examination of the vocational histories of sheltered workshop employees placed in projects with industry and competitive jobs showed that (1) women were more successful than men, (2) placements are as stable as employment of persons without MR, and (3) job structure and social skills are important (Brickey, Browning & Campbell, 1982). Fifty-three sheltered workshop employees still employed after four to five years had parents who wanted them to work competitively and had a great deal of influence over them while those who returned to the workshop or were unemployed did not have such parental support (Brickey, Campbell & Browning, 1985).

Severe Mental Retardation. A follow-up study of adults with severe mental retardation transferred from large institutions to small units found improvement on the Domestic Activity domain of the Adaptive Behavior Scale and that residents' community adjustment is related to community support and training (Hemming, 1986). Integration of students with severe disabilities has been consistently linked to positive outcomes (e.g., social and communication skills; Sailor, Gee, Goetz & Graham, 1988). For the severely mentally disabled, social network size was related to the number of activities a person performed (Kennedy, Horner & Newton, 1990).

Social Integration. A comparison of adults with and without mental retardation showed (1) equal self-rating of well-being, (2) nonretarded adults had significantly more reciprocal relationships and number of friends, and (3) adults with MR in semi-independent situations were neither inactive nor perceived themselves as socially isolated when compared to single adults from the community. Their social integration, however, was extremely limited (Rosen & Burchard, 1990). A study of former students with mild MR remembered (five to seven years later) their special-class experiences as degrading and useless, particularly in providing them a socialization support system (Gozali, 1972). Foster and group homes facilitated independence in a group of behavior problemed youth with mental retardation (Reagan, Murphy, Hill & Thomas, 1980).

Summary of Predictors

High school graduation is a critical factor in later employment (see Table 1, graduate vs. dropout employment rates). Work-study programs benefit not so much in terms of employment status (i.e., whether a person is employed or not) but other employment-related phenomenon such as employment stability, income, job adjustment, etc. Paid work experience also seems to have an effect on employment status although one state study showed negligible influence. The effect of specialized vocational training is significant for adults with moderate to severe mental retardation. Males enjoy a higher employment rate and stability, as well as salary than females although females show an excellent response to vocational training. The lack of a physical or speech disability is associated with higher rates of employment. Within a few years of high school exit, age is associated with employment status. Intelligence is an additional factor that leads to employment success. The development of social skills increases the ability to get along with others, maintain a social support network, and therefore is a factor in employment stability.

A measure of educational success for students with mental retardation is high school graduation. Obstacles to graduation include receiving a failing grade, being a behavior problem, and being a young male. Being a member of a minority may also place a student at risk for unsuccessful completion of high school.

Two studies provided possible predictors of independent living status. One was being married, especially for females, and the other was completing a vocational training program. Educators have little influence on marriage although they could indirectly by improving social and interpersonal skills. The possible association between vocational training and independent living requires further exploration.

Socially, adults with mental disabilities tend to be passive, dependent upon family, and engage in fewer activities than their nondisabled counterparts. They report, however, being satisfied. No studies provided information regarding factors associated with social integration. The development of social skills is nonetheless a necessary prerequisite.

Conclusions

The employment rate of young adults with mild mental retardation (51%) is below the national rate for young adults with no disabilities (62%) and with learning disabilities (70%). The employment rate falls significantly lower when more severe retardation is considered (20%) or those who drop out (16%) are considered. Wages and employment stability are lower than adults with learning handicaps. The unengagement rate of graduates with mild mental retardation is twice the rate of their learning disabled counterparts yet unemployment rates are similar. Postsecondary education participation is one-half to one-third the rate of learning disabled and at best one-fourth that of nondisabled youth. Graduation rates are similar to nondisabled youth and one-half that of persons with learning disabilities. [These graduation rate comparisons may reflect mentally retarded individuals' greater dependency or a behavioral disorder rate similar to that of nondisabled youth. Being a behavior problem places a person at high risk to drop out.] Independent living rates are about half that of adults with learning disabilities while rates for living with parents are similar.

Persons with mental retardation are clearly not functioning as well as youth with no disabilities. The effect of general intelligence is a profound one affecting all aspects of independent functioning. Many of the predictors of outcomes identified above are stable and not plastic

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(e.g., intelligence, gender, age, minority membership, presence of physical or speech disabilities, and family support). The predictors that are malleable for educators are vocational education/training, graduation status, and social/interpersonal skills. It is not clear if independent living skill training is effective, although such education would appear to have a significant impact. These are the areas educators can manipulate to effect change.

Behavioral/Emotional Disorders

Seven studies presented outcome data on former students in special education with behavioral or emotional disorders. Table 3 presents a summary of the findings. The findings are divided into studies presenting data on graduates (N = 2) or graduates and dropouts combined (N = 3) and dropouts (N = 2). The rates on outcome variables for the first two samples were similar. Seventy-six percent of the samples were male. Three of the seven studies were from the state of Washington.

Table 3

Mean Percentages of Critical Outcome Variables

Sample	N	Employed	Any Post-secondary	Unengaged	Lives w/ Parents	Lives Indep.
Grads	5	59(14)	23(9)	29 (5)	56(8)	19(7)
Drops	2	33 (0)	7(5)	57 (9)	56(6)	25(2)

Notes: See Table 1. Employed percent for Drops is based on two studies.

Dropout rates

Five studies presented data on dropout rates (Cy-Fair ISD, 1989; Edgar & Levine, 1987; Iowa Department of Education, 1990; Janes, Hesselbrock, Myers & Penniman, 1979; NLTS, 1989). The calculated rate was 43% (SD = 17). One study was a follow-up of 149 child guidance children followed into adulthood, and it reported a dropout rate of 20% (Janes et al, 1979). These children may not have qualified as BD/ED in a school setting. Exclusion of this study yielded a dropout rate of 49% (SD = 13) with a range of 35% to 65%. The NLTS secured a similar rate of 55%. This compares with a national dropout rate of 25% for nondisabled youth, 38% for youth with learning disabilities, and 20% for youth with mental retardation.

Employment

Approximately 59% (SD = 14) of former students in special education with behavioral disorders were employed either part-time or full-time (Janes et al, 1979; NLTS, 1989; Iowa Department of Education, 1990; Neel, Meadows, Levine & Edgar, 1988; University of Washington, 1989). Rates ranged from a high of 79% (Janes et al, 1979) to a low of 41% (NLTS, 1989). The other three studies' rates were 60%, 60% and 57%. The employment rate for dropouts was 33% (SD = 0; Edgar et al, 1988; Iowa Department of Education, 1990).

Neel et al (1988) reported 62% of their sample receiving wages higher than the minimum wage. Iowa reported 77%, and Washington reported 65%

for an average of two-thirds earning above minimum wage. This figure is similar to the salary earnings of young adults with learning disabilities. Both the NLTS and the Iowa studies reported an hourly wage of $3.94 per hour. Regarding dropouts, the Iowa study reported 72% of dropouts earning salaries above $3.35 per hour but with an average salary of $4.51. Five of six dropouts reported salaries above the minimum wage in the Washington state study (Edgar & Levine, 1987). The majority were employed in low status occupations such as labor and service delivery. Job satisfaction was rated at 36% for graduates in one study (Neel et al, 1988).

Unemployment

Three studies reported unemployment percentages of 21% (Janes et al, 1979) and 19% (Iowa Department of Education, 1990) for an average rate of 20%. By contrast, a 36% unemployment rate was found for dropouts in the Iowa study.

Engagement

Twenty-nine percent of participants from the Graduate and Graduate/Dropout samples were unengaged, i.e., not working or not attending postsecondary education (Cy-Fair ISD, 1989; Edgar et al, 1988; Iowa Department of Education; NLTS, 1989; Neel et al, 1988). This rate was one-half the unengagement rate for dropouts (Iowa and Washington studies).

Postsecondary Education

Seven percent of dropouts participated in postsecondary training or education programs (Iowa, Washington). In contrast, 23% (SD = 9) of graduates continued their schooling (Edgar & Levine, 1987; Janes et al, 1979; Iowa Department of Education, 1990; NLTS, 1989; Neel et al, 1988). In the Washington state study, postsecondary participation decreased from 28% after six months to 16% after two years.

Living Arrangement

There was no difference in the percentage of young adults with behavioral disorders who graduated or dropped out of school who lived with their parents. All seven follow-up studies reported an average rate of 56% with little variability in rate. By contrast, dropouts lived independently at a slightly higher rate than graduates (25% vs. 19%, respectively). This finding indicates an area for further study.

Social Integration

The Iowa state study reported 62% of graduates and 57% of dropouts engaging in one to three leisure activities and 27% and 31%, respectively, engaging in four or more activities. In the NLTS, parents reported how well youth performed self-care skills (dressing oneself, feeding oneself, and getting around to places outside the home) and functional skills (telling time, reading common signs, counting change and looking up names in the phone book). Ninety-four percent of students with emotionally disturbed handicapping conditions performed self-care skills very well, while only about half mastered the four functional skills. The comparative data for all handicapping conditions were 86% and 40%, respectively. In the Washington state study (Edgar & Levine, 1987), 14% of graduates with behavioral disorders had trouble with the law in comparison to 45% of dropouts. Janes et al reported a 20% arrest rate in their sample with 33% using illegal drugs during the past six months.

Studies Comparing Youth With and Without Behavioral Disorders

Two studies, both performed in Washington, utilized a nonhandicapped comparison group (Edgar & Levine, 1987; Neel et al, 1988). In the latter study, 63% and 64% of handicapped and nonhandicapped youth were employed, respectively. Number of hours worked per week and salary were slightly higher for the BD group. Engagement rates were much higher for the nonhandicapped group reflecting their higher attendance in postsecondary education.

Neel et al (1988) found similar results. The BD group was employed at a 60% rate while the nonhandicapped cohorts were employed at 70%. Reported earnings beyond minimum wage was 49% for the nonhandicapped group and 62% for the BD group. Postsecondary school or training participation was 17% and 47% for the BD and nonhandicapped groups respectively. Engagement rates were 69% and 92%, respectively. The nonhandicapped group tended to be working part-time and attending school or training while those in the BD group who found a job tended to work only.

Predictors of Outcome

Two studies specifically examined factors that related to outcomes for youth with behavioral or emotional disorders (Iowa Department of Education, 1990; Janes et al, 1979). The Iowa study attempted to relate vocational programming to outcomes and in general found little association. Paid employment in high school was associated with later employment status for dropouts only. Although not statistically significant, a higher percentage of those with regular (and not specialized) vocational training were employed than those without such training. Male employment rates, salaries, and job stability are higher than for females.

Janes et al's sample of 149 adults was drawn from a child guidance clinic when the mean age was 9.3 years (SD = 2.6), who were again interviewed at approximately 21 years. A number of school-related behaviors were collected in childhood and used to predict adult outcomes status. The item most frequently related to adulthood outcomes was "fails to get along with other children." Low school grades were significantly associated with childhood daydreaming, and high educational attainment was negatively correlated with failing to get along with peers. Amount of employment was significantly related to childhood depression, slow learning, and a preference to associate with younger children. Failure to marry was associated with childhood fighting and childhood negative behaviors. Living with parents was marginally associated with childhood slow learning, failing to get along, being selfish, and having a temper. Adult conduct problems were associated with childhood conduct problems, failing to get along with peers, and preferring younger children (likely a sign of immaturity and/or abusive behavior patterns).

Dropout rates are high for this population. Previously reported factors associated with dropout behavior from the NLTS for students with LD or MR were also found for BD: being young, exhibiting negative behavior, being absent, and having a failing grade in the most recent school year. Failing grades were determined by being young, being a minority, and having an emotional disturbance or behavior problem.

One retrospective follow-up study (Leone, Fitzmartin, Stetson & Foster, 1986) tracked adolescents and young adults two to four years after leaving a specialized program for behavior-disordered youth. Eventual successful participants achieved lower rates of absenteeism, could name specific characteristics that others liked about them, and were likely to be working. Another program designed for disruptive junior high students (Safer, Heaton & Parker, 1981) included a comprehensive token economy, parent contracting, major subjects taught in the morning, small class enrollment, small group and individualized instruction, an early release from school contingency option, and frequent parent-school communications. Students in the program experienced fewer expulsions, suspensions, days out of school for disciplinary reasons and grade failures. After program completion, they entered high school in greater numbers, stayed longer, achieved better conduct ratings, and were more likely to graduate. Boyhood behavior problems are precursors for adult criminal behavior (Faretra, 1979; McCord and Sanchez, 1983; Mitchell & Rosa, 1979).

Conclusions

While the employment rate for young adults with behavioral or emotional disorders (59%) is favorable compared to nondisabled youth (62%), it is lower than former students with learning disabilities (70%) and only slightly higher than persons with mild mental retardation. Like their LD counterparts, postsecondary education participation (23%) is low and the dropout rate is high (47%). About 30% are unengaged in any productive activity. Nineteen percent live independently and this rate is similar to independent living rates of the other handicapping conditions discussed above. However, fewer BD graduates live with their parents when compared to other mild handicapping conditions (about 15% less). Given the nature of their disorder, many do not have the support network to facilitate a healthy transition into adulthood.

Specialized programming to decrease the dropout rate for youth with behavioral or emotional disturbance is indicated by the research. A recent survey by the National Institute of Mental Health (1986) reported that 20% of the population in the United States has a mental disorder that can be diagnosed. This figure included children and adolescents who were showing the largest rate increases. Certainly, 20% of students are not in special education, and this implies that those that are labelled ED or BD are severely disturbed. That programming in particular must focus on extinguishing antisocial and negative behavior patterns and increasing "getting along with peers," or socialization skills. Increasing the rate of graduation through specialized dropout prevention programs geared for this population will be the most significant intervention educators can provide for the BD/ED group.

There is indication that this group suffers from low self-esteem, poor anger control, poor peer relations and identity confusion. Specialized programming to meet these needs is also warranted. These students are at high risk for continued behavior and legal problems. Many of these youth leave school early and do not stay home with parents at the same rate as other youths. Obviously there are family problems that exist. Schools are hard pressed to deal with these kinds of issues. One idea is to have school function as a community center for these and other needy youths. These students do not feel a part of the mainstream and they act out these feelings through problems with the law, high rates of school dropout, and high rates of unengagement.

Hearing Impairment

Three transitional outcome studies of former students with hearing impairment (HI) were reviewed. Two of these studies are from the state of Washington (Edgar & Levine, 1987; Edgar et al, 1988) and the other is from the NLTS (1989). The latter study collected data on students who graduated and dropped out while the Washington studies reported only on graduates. Edgar and Levine grouped hearing and visually impaired into a single category for their analyses but the majority of these groups were youth with HI (N = 51, 77%). The Washington 1987 study used a follow-up strategy while the 1989 study reports data from the first wave of a longitudinal study. Fifty-three percent in each of the Washington samples were female. The NLTS did not provide a breakdown by gender. They collected data on 402 deaf and 470 HI individuals. Sample sizes vary according to outcome measure, however.

Table 4 presents a summary of outcome variables for persons with hearing handicap.

Table 4

Mean Percentages of Critical Outcome Variables

Group	Employed	Any post-secondary	Unengaged	Lives w/ Parents	Lives Indep.
HI/Deaf	43(4)	41(5)	19 (4)	61(6)	32(12)

Dropouts

The NLTS collected data on dropouts of all handicapping conditions including the deaf and HI. Twelve and 16% of youth who are deaf and HI, respectively, dropped out of school. Approximately 72% in each category graduated and the remaining students aged out of high school. The 72% graduation rate is among the highest of all students in special education (Mean rate = 56% in the NLTS sample); the dropout rate is among the lowest (Mean rate = 36%).

Factors that contribute to dropping out for students with a hearing disability (deaf and HI) were analyzed in the NLTS study. Similar to other handicapped groups, being young (i.e., 16 rather than 18) and exhibiting negative behavior were the most significant predictors ($p < .001$). Other significant factors associated with dropping out were head of household being unemployed and relatively uneducated, living in an urban area, and not belonging to a group (not socially integrated).

Employment

Forty-three percent (43%) of young adults with HI/deaf were employed. Within the first two years of high school exit, 40-41% were employed while averaging over 1-5 years, 47% were employed (Edgar & Levine, 1987). The NLTS reported rates of 38% for the deaf and 45% for HI.

Similar percentages were employed in full-time work (23%) but more youth with HI were employed part-time.

The average hourly wage reported in the NLTS study was $4.08 per hour. In the Washington studies, one-third earned more than $135 a week or above minimum wage (28% for youth out of school one to two years vs. 37% for youth out for one to five years). The type of employment was generally low status occupations (clerical, janitor, retail; Edgar et al, 1988).

Postsecondary Education

Approximately 41% of this group were attending some kind of postsecondary schooling. Higher rates were found in the Washington studies (44%) than in the NLTS (35%). The NLTS reported a slightly higher postsecondary education participation rate for the deaf (39%) than HI (30%). Hearing impaired were more likely to participate in vocational training (40% of postsecondary attenders) than the deaf (18%); however, deaf students were twice as likely to attend a four-year college (15% vs. 7%).

The NLTS included a regression analysis of individual and contextual characteristics of postsecondary education participation. For the hearing disabilities group (deaf and HI), five factors were associated with participation: youth is a high school graduate, left high school more than one year ago, is male, and did not have discipline problems. A socioeconomic index, head of household education was positively related to participation. IQ was uncorrelated with participation in postsecondary education.

Engagement

The average rate of engagement for this hearing disabled population was 81% (SD = 4). Only 19% of this group were not engaged in some form of productive activity after high school. It is interesting to note that the engagement rate for youth one to two years out of school was higher than the engagement rate for youth one to five years out of school (17% vs. 24%). Since only three studies contributed to this calculation, this finding should not be interpreted as definitive.

Living Arrangement

Approximately 32% (SD = 12) of youth with a hearing handicap lived independently (lived alone, with spouse or roommate, in a dormitory or in military housing). Of all the outcome measures listed in Table 4, the greatest variation in reported percentages occurred in independent living status. The Washington studies reported a combined rate of 38%, double the NLTS rate of 19%. The reason for this disparity is unknown.

Only the Washington studies reported a specific value for living with parents. The combined rate was 61% with rates of 65% for youth out of school one to two years and 56% for youth out of school one to five years.

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Social Integration

Little was reported on the community or social integration of youth with hearing handicaps. Edgar et al (1988) reported that 67% had utilized the Washington State Division of Vocational Rehabilitation, 6% the Job Corps, 6% tutoring and 3% counseling. Seventy-six percent of parents were satisfied with their child's high school program compared to 63% for all handicapping conditions.

Comparison of Youth With and Without Hearing Disabilities

The two Washington studies compared youth with hearing disabilities with nonhandicapped youth. In the 1987 follow-up study, 44% of sensory impaired (76% HI) vs. 51% of nonhandicapped (NC) youth attended postsecondary schooling. In the 1988 study, 61% of HI versus 49% of NC were in postsecondary education. There appears to be little difference in postsecondary education participation rates between HI and nonhandicapped youth.

Combining across studies, 44% of HI versus 69% of NC youth were employed 6 months after graduation. A salary of over $135 per week was accomplished by 41% (13/32) of HI and 35% of NC youth. Combined unengagement rates were 20% of HI versus 7% for NC. Independent living rates were 39% and 35% for HI and NC, respectively.

In summary, young adults with hearing handicaps attended postsecondary educational institutions and live independently at similar rates as nonhandicapped youth. They, however, are employed at slightly lower rates.

Predictors of Outcome

Only the NLTS provides some data on factors associated with successful outcome. Some of these predictors were noted above in the sections on dropouts and postsecondary education.

Education

The NLTS also reported on factors associated with failing grades. For students with hearing handicaps, failing grades were associated with being deaf (as opposed to HI), school absenteeism, a lack of social integration, and being mainstreamed. To reiterate, dropping out of high school was related to being male, low head of household education, unemployed head of household, living in an urban area, exhibition of negative behavior, and lack of social integration. Attendance in postsecondary education was correlated with high head of household education, being deaf, being a high school graduate, not having a discipline problem and leaving high school more than one year ago.

The recurring variables from these analyses of educational attainment are: (1) education level of the head of household; (2) exhibition of negative behavior; and (3) social integration. Youth with a hearing handicap achieve high levels of educational attainment if the youth's head of household is well educated and the youth is not a discipline or behavior problem and is socially integrated into his/her peer group.

Employment

Factors affecting current employment of out-of-school youth with hearing handicaps (from the NLTS) are being male, having an educated head of household, living in a two-parent household, not living in a rural area, having a hearing impairment the onset of which is after age three, being out of school more than one year, being a high school graduate, and not being enrolled in postsecondary education during the past year. This latter finding implies that these youth tend either to be in school or employed but not both simultaneously.

Conclusions

Individuals with hearing impairment, compared to youth with learning, mental or emotional/behavioral disabilities, have transitional outcomes that rival the nonhandicapped population. Only in the area of employment status do they lag behind their nonhandicapped and learning disabled counterparts. High school graduation and postsecondary education participation rates and average salary are similar to nonhandicapped groups. They fare better than the three major handicapped groups in postsecondary education, engagement, and high school graduation. They also tend to utilize agencies and services (e.g., rehabilitation agencies) at higher rates suggesting higher levels of social integration.

Like other handicapping conditions, socioeconomic (e.g., head of household education) and socio-emotional (behavior problem, social integration) indices are most associated with a lack of educational attainment. Likewise, engagement is associated with gender (i.e., being male), socioeconomic factors (e.g., education), and various youth behaviors (graduation, social integration, lack of behavior problem).

Visual Impairment

Persons with visual impairment (VI) comprise those with partial sight and blindness. Four outcome studies were identified that specifically reported adult transition outcome data (Edgar et al, 1988; Heiden, 1989; NLTS, 1989; Wolffe & Wild, 1984). One of the studies employed a follow-up strategy of students who graduated from the Wisconsin School for the Visually Handicapped (WSVH) from 1978 to 1987. The three remaining studies utilized a longitudinal design and first assessments were made one to two years after high school exit. The Edgar et al study, an examination of all handicapping conditions in the state of Washington reported data on just nine persons with VI (5 female). The only other study to report gender data was Wolffe and Wild (41% female; total N = 195). Only the NLTS (N = 279) reported data on graduates and dropouts; the remaining three sampled graduates.

Table 5 presents a summary of critical outcome variables. Because of Edgar et al's sample size, mean percentages are presented with and without this study's results. As can be seen by an examination of the standard deviations, exclusion of the Edgar et al study reduced the variability of the findings. The following discussion presents results excluding this sample.

Table 5

Mean Percentages of Adult Outcome Variables

Sample	Employed	Any Post. Secondary	Unengaged	Lives Indep.
Total VI	32(18)	47(15)	16 (8)	41(21)
W/out Edgar et al	39(14)	40 (6)	17 (9)	26 (0)

Notes: Standard deviation in parentheses. (0) refers to only one study contributing to this cell. VI refers to visually impaired. Living with parents information not available.

Dropouts

Only the NLTS reported dropout data. Approximately 17% of students with VI dropped out of school while nearly 70% graduated. These values closely resemble those of the hearing impaired/deaf. Factors associated with dropout were also examined. The NLTS found that among students with VI being young (16 vs. 18) and having a lower IQ correlated with dropping out of high school. This relationship between younger age and dropping out may actually be related to a factor persistence. Failing grades in high school were associated with being young, male, having a speech disability, being mainstreamed for a large number of classes, and being absent at a high rate.

Employment

Thirty-nine percent of young adults with VI were employed. The rates varied between the NLTS (24%) and the remaining two studies which performed follow-ups on youth who had attended schools for the visually impaired (44% and 50%). The NLTS did not identify who constituted the VI sample. Heiden cited but provided no reference for an article claiming a national adult employment rate of 31% for persons with VI. Approximately half of those employed worked full time. Only the NLTS reported wage data, and for their sample the mean wage was $3.12 per hour.

Types of work varied from entry level positions such as assembly line worker and car wash attendant to teacher and computer programmer (the latter were from the one to ten year follow-up study, Heiden, 1989).

Postsecondary Education

Persons with visual impairment attend postsecondary education institutions in relatively high numbers (40%). Their postsecondary attendance rate is the highest among all handicapping conditions (mean approximately 20%). Data from the NLTS indicate that the large majority (90%) of these students attend 2-year or 4-year colleges rather than vocational school. There was little variation across studies of participation in postsecondary education.

Engagement

Unengagement rates also showed relatively little variation. Across studies, 83% of persons with VI were employed, attending school or gainfully involved in some productive activity. Two of the studies reported unengagement rates in the low 20s (%) while the third study (of Britons) reported a 7% figure.

Living Arrangement

Only the NLTS reported on living or residential status. They reported that 26% of young adults with VI lived independently.

Social Adjustment

Heiden reported 79% of her sample were satisfied to extremely satisfied with their overall current status. Of all the specialized classes offered in the WSVH, adaptive daily living, orientation and mobility, and word processing were most highly rated by graduates. Physical education, home economics and business education followed with courses on metals and electricity cited as least useful. Instruction in the use of adaptive devices for VI were highly rated (81%). About half of the sample reported vocational evaluation and career development activities as useful. Eighty-five percent reported extracurricular activities as useful.

The NLTS reported 52% of their sample of persons with VI accomplished very well basic self-care skills such as dressing oneself, feeding oneself, and getting around their neighborhood (handicapped mean = 86%). Twenty-two percent (compared to an overall handicapped mean of 40%) could perform very well four functional skills (telling time, reading common signs, counting change, looking up a phone number in a telephone book.

Predictors of Outcome

Two of the studies correlated outcome with individual or contextual characteristics. Wolffe and Wild (1984) used a measure of occupational success (length of time employed/time available for employment) [author's note: actually a measure of employment stability] in their sample of 169 employed young Britons. Occupational success was related to gender (males higher), "academic qualifications" ("ranked according to type and number of certificates"), visual impairment attitudes (responding 'no' to "Would you describe yourself as a handicapped person?", Does your visual problem prevent you from leading a normal life?", and "Do you think it's up to the normally sighted person to make an effort to understand partial sight?"), and distance visual acuity (higher success with better acuity).

The NLTS found current employment associated with gender (male). More males were employed than females. Postsecondary education participation was associated positively with head of household education, youth being a high school graduate, having left high school over one year ago, and belonging to a group (i.e., being socially integrated). Dropouts tended to be younger and of lower IQ.

Conclusions

Definitive conclusions cannot be made at this time due to the limited data available on adult transition outcomes for VI. Some tentative conclusions, however, are drawn below.

Combining the average employment, postsecondary education participation, and unengagement rates of persons with VI yields a total of 96%. This sum indicates that most graduates with visual impairment work or go to school but not both. As indicated above, persons with VI attend postsecondary educational institutions (46%) [and colleges in particular (36%)] at high rates relative to other handicapping conditions (20%) and rival the rates for the nonhandicapped population (46%). Employment rates, however, are relatively low.

Factors associated with successful outcomes include: (1) for occupational success, being male and being a high school graduate. Success might also be related to better visual acuity and nonnegative attitudes about being partially sighted. (2) Similar to other disability categories, educational success was associated with IQ, graduating from high school, high head of household educational level, being socially integrated, and staying in school. (3) Social adaptation appears to be related to receiving adaptive living skills that are relevant to the visually impaired.

Physical Disabilities

Three studies reported data on the postsecondary outcomes of the physically impaired (PI). Two of the studies originate from the state of Washington (Edgar & Levine, 1987; Edgar et al, 1988) and the third is from the NLTS. The two longitudinal studies (NLTS, Edgar et al) separated out orthopedically impaired (OI) from other health impaired (OHI). The NLTS had a sample size of 388 while the two Washington studies had samples of 51 and 65, respectively. Gender distribution was reported in the two Washington studies and varied from 63% male to 49% male, respectively.

Table 6 presents a summary of critical outcome variables. Data are separated out for PI, OI and OHI. The PI summary statistics are based on three studies while the latter two groups are based on two.

Table 6

Mean Percentages of Adult Outcome Variables

Group	Employed	Any Post-secondary	Unengaged	Lives w/ Parents	Lives Indep.	Dropped Out
PI	39(20)	28(13)	34 (5)	74(15)	19(11)	19
OI	23(13)	39(16)	37 (6)	85 (0)	11 (1)	16
OHI	37(11)	33 (3)	27 (1)	84 (0)	15 (1)	26

Notes: Standard deviation in parentheses. Indep. refers to Independently. (0) refers to an N of 1 for this cell. Drop out percentage is based on NLTS only.

Table 6 shows a number of different findings about the studies included in the calculations. The first is the low variability in unengagement rates despite moderate to high variability in employment and postsecondary education rates. The second observation is the reduced variability when OI and OHI are separated and considered distinct categories. The third observation is the different values for OI and OHI categories.

Dropout

The NLTS reported a combined PI dropout rate of 19% with an OI rate of 16% and an OHI rate of 26%. Factors associated with PI dropout include being young (16 vs. 18), low head of household education, exhibition of negative behavior, and not belonging to a group. Receipt of failing grades was associated with being male, absenteeism, mainstreaming, grade retention, higher self-care ability, and not being in a single parent household.

Employment

The 39% PI is higher than either the OI (23%) or OHI (37%) rates of employment, the latter two figures based on two studies (see above). The third study, a one-to-five year follow-up, found a 59% employment rate for all PI, suggesting higher rates of employment the longer individuals are out of school.

Persons with OI are employed at a lower post-high school rate than are OHI. The NLTS found similar rates of part-time employment between the two groups but OHI were much more likely to be employed full time (14% vs. 1%). Edgar et al, although based on a much smaller sample, also found higher rates of full-time employment for OHI (29% vs. 20%).

Postsecondary Education

The overall postsecondary education participation rate was 28% (SD = 13). The rate for those who recently left school (about one year) was 35%. There was a slight difference between participation rates for OI (39%, SD = 16) and OHI (33%, SD = 3). Consistently across studies, approximately 70% of PI attend 2-year or 4-year colleges.

Unengagement

The overall unengagement rate for PI was 34% (SD = 5%) but was higher for OI (37%, SD = 6) than for OHI (27%, SD = 1). This difference is of interest to note because OI has a lower dropout rate yet has a higher unengagement rate. This group has a tendency to go to college but not work (e.g., lower levels of full-time employment) compared to OHI who work and go to school in approximately equal percentages.

Living Arrangement

Seventy-four percent of young adults with PI lived with their parents based on the Washington state studies. The one study that separated OI from OHI showed no difference in their rate of living with parents. Independent living varied according to how long students were out of school. The one-to-five year follow-up found 31% living independently while the other two studies had a combined rate of 13% (SD = 1). OHI (15%) tended to live independently at a slightly higher rate than OI (11%).

Social Adjustment

Little data were presented in this adult domain. The NLTS found 42% of persons with OI to perform self-care skills (dress, eat, get around the neighborhood) very well compared to 65% of OHI. OHI performed functional skills (read common signs, tell time, count change, use the telephone book) very well at higher rates than OI (48% vs. 40%).

Predictors of Outcome

The NLTS provided some data on factors affecting outcomes for PI. Regarding employment, the only factor affecting whether a youth was employed or not was whether the use of a physical aide device was needed. Those who did not need a physical device tended to be employed at higher rates. Based on the summary presented above, within the PI group, having health handicaps other than orthopedic handicaps was associated with higher employment success.

Factors positively associated with postsecondary education participation included head of household education, functional ability, high school graduation, and left school more than one year ago. As indicated previously, dropout was related to being male, low head of household education, lack of social integration and exhibition of negative behavior.

Conclusions

Definitive conclusions about youth who have physical disabilities cannot be drawn due to the existence of few data samples. A few findings from the existing data provide tentative conclusions, however.

First, the differences between the adult status of OHI versus OI. Persons with other health impairment appear to be employed, engaged and living independently at higher rates than persons with orthopedic handicaps. This difference may exist because use of a physical aide device is associated with employment status, and persons with OI probably tend to need such devices more than persons with OHI.

Second, OI show a slightly higher rate of educational attainment than OHI. Their participation rate in postsecondary education is slightly higher and their dropout rate is slightly lower.

Third, reasons for dropping out are similar among PI as those with other handicaps. Low head of household education, poor social-emotional adjustment, and being male are factors that tend to increase the risk of dropout.

Autism

Initially considered an early form of adult schizophrenia, autism was recognized as a separate diagnostic category in the 1940s. The Diagnostic and Statistical Manual (Third Edition) defines infantile autism as a pervasive developmental disorder often characterized by autistic behavior, extremely poor communication and language ability, and social withdrawal. Most follow-up studies of persons with autism focused on children, mixed autism and schizophrenia, were of short duration, and were published prior to 1975. Results of these studies generally showed that the majority of autistic children have very poor adult outcomes. Although early and classic indices of autism (e.g., stereotypic hand movements, rocking) diminish with age, impairments in communication and social skills extremely limit adult adaptation. Better outcomes were associated with IQ and useful speech development before age five.

Two studies published since 1975 on high functioning adults with Residual Autism have presented data on transitional adult outcomes (Rumsey, Rapoport & Sceery, 1985; Szatmari, Bartolucci, Bremner, Bond & Rich, 1989). The Rumsey et al study studied the psychiatric, social and behavioral outcomes of 14 men (mean age = 28). Nine of these 14 had an IQ greater than 82. Szatmari et al used a follow-up strategy to report on twelve men and four women with an average IQ of 92 with a range of 68 - 110 (mean age = 26). In this latter study, two in the sample were siblings and another two were cousins. The response rate for this study was 44%.

Table 7 presents a summary of critical adult outcome variables. Percentages are weighted means. That is, because of the small sample size and richness of data reported in the two studies, all results were combined and divided by 30 (total sample size), and therefore, there is no calculation of the standard deviation.

Table 7

Mean Percentages of Adult Outcome Variables

Employed	Any post-secondary	Unengaged	Lives w/ Parents	Lives Indep.	Dropped Out
37	30	17	63	20	13

Notes: All cells based on an N of 30 subjects. Indep. refers to Independently.

Adults in the Szatmari et al study were generally higher functioning than those from the Rumsey et al study. The sixteen adults from the former study all graduated high school, and seven went on to obtain college degrees. Seven were employed, three were students, two were unemployed and four attended workshops. Types of employment included:

physics tutor, salesperson and participating in a family business. Only two required more than minimal supervision with half not requiring any. Persons who did not require supervision managed their own finances, met their own daily needs, and would be able to look after themselves in the future. Five lived independently, one in a group home and ten lived with their parents. One was married, three dated regularly, three dated occasionally, and seven did not date.

Vineland Social Maturity Scale scores were computed for each subject. Overall, eleven of the sixteen demonstrated average to above average adaptive functioning (compared to nonhandicapped persons), four scored one to two standard deviations below the mean while one scored greater than two standard deviations below the mean. Subscale score analysis indicated best functioning on the domain of "activities of daily living" (thirteen of sixteen in the average to above average range), the lowest functioning was on the domain of "communication" (50% within the average range), with "socialization" functioning between the two (ten of sixteen within the average range). There was a very strong correlation between overall Vineland score and IQ (r = .60).

Nonverbal communication skills (e.g., unchanging facial expression, paucity of gestures, poor eye contact, affective nonresponsivity, lack of vocal inflections) were more impaired than verbal skills. About half the sample showed deficits in nonverbal skills while few gross verbal deficits were noted. Psychiatric symptoms were more common than would be expected in the general population with five subjects judged by their parents as meeting a formal diagnosis. Obsessive or anxiety symptoms were not uncommon.

Predictors of outcome other than IQ were being "from a well-off family," mother being a strong advocate for the child, and considerable improvement by late adolescence. Interestingly, early history variables such as social impairments toward others, deviant language and bizarre responses were not significant predictors of later adjustment (as measured by the Vineland).

Rumsey et al's sample had a mean Verbal IQ of 93 and a mean Performance (nonverbal) IQ of 97. The mean Vineland score was 60, and in comparison to average intelligence, indicated deficits in self-direction, socialization, and occupational achievements. Only one of the fourteen scored within the average range. [Analyses conducted for this report found a Pearson correlation of .59 between IQ and Vineland score.] Four of the 14 were employed (janitor, library aide, taxi driver, key punch operator), three were in sheltered workshops, four in vocational training, two unemployed and one in a state hospital. Only one of fourteen lived independently, three in a supervised home setting, one in a state hospital and the remaining 64% lived with parents. Four dropped out or aged out of high school while two attended college. All subjects displayed some residual autism symptoms with four of the fourteen still warranting the diagnosis of Infantile Autism (DSM III). Obsessional preoccupations were common.

Conclusions

The majority of the above reported cases had a poor outcome. Persisting social impairments and poor occupational achievement were major characteristics of persons with autism. The findings suggest that children with autism do not generally develop schizophrenia or other adult psychiatric disorders, but rather continue to display milder symptoms of their originally diagnosed autism. These persistent symptoms significantly limit their ability to function adaptively. General intelligence and possibly a highly supportive and persistent family were the only predictors of outcome. Consistent with previous literature, intelligence is a main factor in the successful adaptation for high functioning persons with autism. The two studies were primarily descriptive in nature and did not identify educational variables to predict outcome.

Speech, Multiply and Deaf/Blind Handicapped

The NLTS (1989) was the only study to report outcome data on students transitioning from high school to adulthood who have handicapping conditions of speech impaired (SI), multiply handicapped (MH) and deaf/blind (D/B). The respective sample sizes were 222, 182 and 45. All former students were assessed one to two years after high school exit. Results will be presented according to disability category. Table 8 presents a summary of outcome data for the three disability groups.

Table 8

Mean Percentages of Adult Outcome Variables

Handicapping Condition	Employed	Any Post-secondary	Unengaged	Lives Indep.	Dropped Out
Speech	50	29	19	13	33
Multiply	4	4	59	3	18
Deaf/Blind	10	8	67	3	8

Notes: Indep. refers to independently.

Speech Handicapped

Rates on the critical adult outcome variables for persons with speech impairment closely resemble the outcomes of persons with learning disabilities. The two groups had similar rates of employment (SH 50% vs. LD 57%), unengagement (19% vs 19%), dropout (33% vs. 36%), and percent of students receiving one or more failing grades in the most recent school year (35% vs. 35%). SH had higher rates of postsecondary education participation (29%) than did LD (17%) but did not live as independently (13% vs. 22%) nor earn the same hourly wage ($4.09 vs. $4.63). Rates of persons in the two disability categories performing self-care skills very well (dress self, feed self, get around the neighborhood) were similar (92% vs 95%) as were performance of functional skills very well (54% vs. 46%; count change, tell time, read common signs, use telephone book).

Of those SH that were employed there was a tendency to work full time (58%) as was true for LD (66%). Of those who participate in postsecondary education, 82% attend 2-year (57%) or 4-year (25%) colleges. In contrast, LDs tended to attend vocational or trade school (52%) rather than college.

Multiply Handicapped

The young adult outcomes of the multiply handicapped is generally poor. Only about one-third graduate from high school, one-half of MH age out, and the remainder drop out. Very few receive postsecondary education (4%) and those that do attend 2-year colleges. Only six percent work for pay and most of these are employed part time (77%). The average salary is $3.39 per hour, about the minimum wage. The engagement rate was 41% even though only 10% received postsecondary education and/or were working for pay. It was likely that the remaining 30% were engaged in workshops or other day activities.

Three percent lived independently. Parents reported 35% of MH performed self-care skills very well and only 8% performed functional skills very well (see above for definitions). It is apparent from these percentages that the MH are severely handicapped and have poor transitional adult outcomes.

Deaf/Blind

The adult outcomes of persons who are deaf/blind are similar to the outcomes of MH. Only 33% are engaged in productive activity with 8% attending postsecondary school (all vocational or trade) and 10% working for pay (all part time). No average salary was computed in the NLTS. Three percent live independently. About 50% age out of high school with 43% graduated and 8% dropping out. Parents report 21% perform self-care skills very well and 5% perform functional skills very well.

Cost-Benefit Analysis in Special Education

The public has come to expect accountability from all social service programs and recently has been concerned about the value of special education. Historically, a need for special education emerged for humanitarian and societal reasons but the efficiency and productivity of special education has rarely been examined. Recent efforts to examine the efficacy of special education has been done through cost-benefit analysis, and accounting and program evaluation techniques (Lewis, Bruinicks, Thurlow & McGrew, 1988).

In basic terms, cost-benefit analysis is concerned with evaluating the economic efficiency of (special education) programs by a comparison of their benefits and costs. One assigns dollar values to all possible effects and costs. These values are then summed together to yield an estimate for the program's monetary value. Over time, values are adjusted to reflect inflation effects. A positive net value indicates that program resources are being used efficiently.

A few studies have analyzed cost-benefit data (Brickey, Campbell & Browning, 1985; Hill & Wehman, 1983; Hill, Wehman, Kregel, Banks & Metzler, 1987; Lewis et al, 1988; Wehman, Hill, Hill, Brooks, Pendleton & Britt, 1985). There have been applications of cost-benefit analysis in other social service programs (e.g., mental disorders; Weisbrod, 1981). Braddock, Hemp & Howes (1987) analyzed state-federal expenditures for community services for persons with mental retardation. Nearly all cost-benefit analyses have targeted persons with mental retardation and focused primarily on employment outcomes.

Hill and Wehman and their associates as well as Brickey et al primarily focused their analyses on employment outcomes of persons with moderate to severe disabilities and sheltered workshops. Their results after five to eight years show positive financial consequences accruing to the public. Hill et al's (1987) analysis showed an eight-year positive net value of $1,000,000 of which half was a direct benefit of placing consumers with moderate and severe disabilities in supported competitive employment. Brickey et al (1985) found a majority of 53 sheltered workshop employees still employed after five years accruing a net benefit of $442,000. In their analysis, they projected a negative one-half million dollar figure if all employees remained under the dependency of the workshop.

Major issues in cost-benefit analysis include specification of a comparison against which the identified program will be judged. This represents a design issue because one cannot incorporate a no-treatment control in special education. Both Brickey et al. and Lewis et al. incorporated hypothetical alternatives. Another approach is to make comparisons among disability categories. Other issues include the development of an appropriate accounting system in which to collect data and the valuation of all possible costs and benefits. Many outcomes are immeasurable (e.g., job satisfaction, lack of isolation and passivity), or the outcomes are difficult to measure (e.g., effects of independent living vs. staying with parents, cost of public services).

Hill et al describe an analytic procedure for cost-benefit analysis derived from accounting procedures. Their model provided a description of the actual monetary outcomes resulting from a supported employment program. The variables they assign dollar values to include (1) months worked, representing an accumulation of all jobs held; (2) staff intervention time, the amount of time that direct service staff spent with each consumer; (3) ratio of service quotient, the overall amount of time spent by all trainers representing the total direct service effort; (4) reduction in SSI, computation of actual reduction in supplemental income over the period of employment; (5) estimated alternative program cost savings, decreased service expenditures as consumers move into competitive employment; (6) estimated total taxes paid from competitive employment; (7) a calculation of total public savings; (8) targeted jobs tax credit, the amount of money that employers deduct for hiring persons with disabilities; (9) total project expenditures, a sum of direct service, administrative and clerical staff salaries, fringe benefits, and other business expenses; (10) consequences to the taxpayer; and (11) total wages earned.

Lewis et al had a slightly different approach because unlike Hill et al their analysis did not involve an isolated program but a group of former public school students with mild mental retardation who lived in the community. They used a comprehensive program components approach for identifying, measuring, and valuing the costs of special education services. Cost estimates were based on all resources employed in the delivery of both regular and special education services and were reported for thirteen special education service areas and grade levels. Some of the variables they measured included (1) increased earnings, the average annual earnings of all consumers; (2) increased fringe benefits, annual gross earnings multiplied by .15; (3) work preference, an unmeasured positive outcome measure; (4) institutional care costs, the average annual per-capita cost of care in state-operated residential facilities extrapolated over a lifespan of forty-four years discounted to present value (a savings index); (5) other benefits--immeasurable benefits such as community residency; (6) special education costs, the average annual costs for services compounded over twelve years and expressed in present dollar value; (7) regular instruction costs, the added costs for the eligible students (who remained in school); (8) use of social services, unmeasured in their study due to ambiguity in responses; and (9) increased use of transfer programs, representing the increased use of Medicaid and SSI when students are living in the community.

The results of these studies indicate that it is possible to employ a formal cost-benefit framework to assess the efficacy of special education services. Much of the results depend upon the quality and detail of collected data and the use of an appropriate comparison group. Benefits and costs will differ according to disability and therefore creativity is required to identify these possible factors, e.g., cost of imprisonment.

Another issue relates to dropouts and how they fare. Dropouts can be additionally incorporated as a quasi-control group in which comparisons can be made on the effects of receiving versus not receiving special education (and regular education) programming.

Implications

Comparisons among Handicapped and Nonhandicapped Youth

Table 9 presents a summary of the critical adult outcome variables for all 10 handicapping conditions and nonhandicapped youth. The percentages for the handicapped groups are taken from previous tables in this report and consist of those percentages from graduate and/or dropout samples. The mean values in the table are simply the arithmetic means of the percentages listed in the table (except MR mod/sev). Values for the nonhandicapped entries were provided from the associated reference as noted. Most of these data reflect being out of school one to two years.

Comparison of the nonhandicapped figures to the mean handicapped values reveals that relative to nondisabled youth, youth with handicapping conditions are employed to a lesser degree (about one-third less), participate in postsecondary education less (about half as much), and tend to live with their parents more frequently. Extrapolating to those adult outcome figures that do not have an entry for nonhandicaps, nondisabled youth are less unemployed, much more engaged (employed + postsecondary > 100% vs. 68% for disabled youth), and live much more independently. [This last conclusion regarding living independently is based upon the knowledge that nondisabled youth tend not to attend sheltered workshops or supervised living situations which are more frequent for youth with disabilities. The difference between the sum of living with parents and living independently and 100% reflects handicapped youth's dependence upon supervised living settings.]

Interestingly, the only similarity between youth who are disabled and nondisabled was in the dropout rate (23% vs. 25%, respectively). This finding is in contrast to the NLTS which found a much higher (36%) dropout rate for youth with handicaps. The reasons youth give for dropping out are similar whether there is the presence of a handicapping condition or not. Not doing well in school, not liking school, being pregnant or childbearing, needing/wanting a job, having a major behavior problem were similar reasons youth provide for dropping out irrespective of disability. No singular study has formally examined if any differential predictive factors are associated with dropouts in nondisabled and disabled categories.

The implications of these findings indicate that youth with disabilities as a whole are disadvantaged in a nondisabled environment. Their relative lack of engagement (even among the milder forms of disability) suggests either a lack of planning, a lack of knowledge about available resources or an identity diffusion in which there is little understanding of how to fit into society. Despite similar dropout rates, youth with disabilities are employed less and attend school less. These youth require additional direction and purposeful planning.

Table 9

Mean Percentage of Outcome Variables for Graduates

	Engaged		Unengaged			
Condition	Employed	Any Post-secondary		Lives W/ Parents	Lives Indep.	Dropped Out
LD	71	28	19	71	22	38
MR						
mild	51	14	42	69	18	20
mod/sev	20	8	36	62	6	-
BD/ED	59	23	29	56	19	49
HI	43	47	19	61	32	13
VI	39	40	17	-	26	17
PI	39	28	34	74	19	19
Aut	37	30	17	63	20	13
SH	50	29	19	-	13	33
MH	5	4	59	-	3	18
D/B	10	8	67	-	3	8
Mean (all) (SD)	40 (20)	25 (13)	32 (18)	66 (7)	18 (9)	23 (13)
NH	62[1]	56[2]		50[3]		25[4]

Notes: LD - Learning Disabled; MR - Mental Retardation; BD/ED - Behavior/Emotional Disorders; HI - Hearing Impaired; VI - Visually Impaired; PI - Physically Impaired; Aut - high-functioning Autism; SH- Speech Handicapped; MH - Multiply Handicapped; D/B - Deaf/Blind; NH - Nonhandicapped.

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[1] Borus, 1984.

[2] Butler-Nalin & Padilla, 1989

[3] Jones, et al, 1986.

[4] Center for Educational Statistics, 1987.

Comparisons among Categories of Handicaps

There was marked variation among the differing handicapping conditions with respect to adult outcome variables. However, certain handicapping conditions revealed similar rate patterns as reflected by the percentages in Table 9. The LD handicapping condition profile was similar to the profile of SH (except for employed), the sensory handicaps were very similar (HI, VI), and the most severely functioning groups were similar (MH and D/B). As noted in the chapter on PI, orthopedically impaired revealed a different profile than did other health impaired. Neither of these PI sub-handicaps were similar to any other handicapping condition.

With respect to employment, the LD group had the highest rate of employment (71%), followed by a group of other mild handicapping conditions with employment rates in the 50 to 60 percent range (BD/ED, Mild MR, SH), followed by a group of physical or perceptual disorders with employment rates around the 40 percent (VI, HI, PI, and high-functioning Aut), and then a final group of minimally employed groups (MH, D/B, and most Aut). Unemployment rates for mild handicapping conditions were in the percentage range of low 20s (LD, Mild MR, and BD/ED).

Postsecondary education participation differed among groups. The highest rates (40 to 50 percent) were achieved by the sensory impaired groups (HI, VI), followed by other nonretarded mildly disabled handicaps in the 20 to 30 percent range (SH, LD, PI, BD/ED, and high-functioning Aut), the mildly mentally retarded (14%), and finally the severely impaired (mod/sev MR, MH and D/B). Unengagement rates were very high for the severely impaired (MH, D/B, approximately 60 percent). The mentally retarded (mild and mod/sev) also had relatively high unengagement rates (approximately 40%). BD/ED and PI had unengagement rates of about one-third, while the remaining handicaps (cognitive or sensory) consistently achieved engagement rates in the percentage range of low 80s.

Relative to the other categories of adult outcomes, there was relatively little variability in living arrangements. Other than the severe handicaps (MH, D/B, mod/sev MR) and the sensory impaired, independent living rates were in the teens to 20 percent. The high rate of independent living for VI and HI was due to their high rate of college attendance where they lived in dormitories. There was generally little variability in living with parents among the groups except for the BD/ED handicap who tend to leave home at higher rates probably reflecting family dysfunction.

The BD/ED group was also singularly characterized by their extremely high dropout rate (49%). The mild cognitively impaired (LD, SI) maintained relatively high dropout rates in the 30s (%), while the remaining groups had dropout rates in the high teens (%), lower than their nondisabled counterparts.

Relative to other handicapping conditions, persons with LD are characterized as a group by high unemployment, moderate postsecondary education participation, relatively low levels of unengagement and average independent living. Their high dropout rate does not appear alarming in that they exit school to work, likely a reflection of some awareness of their limitations in the school (academic) environment. A good number of these individuals participate in postsecondary education and work (compare rates for employed, unengaged and postsecondary in Table 9).

The differences between mild MR and moderate/severely MR are notable but so are the similarities. Unengagement rates are similar, although probably for different reasons, as well as the percentage attending training after high school, and dependence on parents. Mild MR have higher rates of employment and living independently. Nonetheless, even the mildly MR show low levels of employment considering that so few participate in postsecondary education (e.g., compare to LD). Their unengagement rate is also extremely high.

Persons with BD/ED show a unique profile with an extremely high dropout rate and a high rate of leaving home (without attending college). Their dropout rate both at school and from home likely reflects their rejection of basic social institutions which they do not feel a part of, experiences of failure in these systems from which they drop out, and/or a need to function independently without dependence on social institutions. It should be noted that their adaptation is marginal. Although their employment rate is similar to the nonhandicapped population, their participation in postsecondary education is low relative to this population and they fail to live independently at moderately high rates. In addition, 29% are unengaged.

The sensory impaired (VI and HI) currently have the most successful transition to adulthood. Their dropout rate is low compared to both handicapped and nonhandicapped populations and their rate of independent living is twice the handicap average. Employment rates are low but their level of college attendance approaches that of nondisabled youth. Programs for these handicapping conditions appear to adequately prepare these youth for adulthood.

Persons with SH adjust in similar ways after high school exit as individuals with LD. The main difference between the two groups is in their rate of employment (50% vs. 71%) which likely leads to the difference between independent living rates (13% vs. 22%). It appears that persons with SH either work or attend postsecondary education but not both. [It should be noted that findings on SH were based upon only one study. However, one would expect SH to "look like" LD due to the fact that both groups are characterized by a cognitive disability.]

Based on the data accumulated on the outcomes of PI, it would seem justifiable to make a distinction between OI (orthopedically impaired) and OHI (other health impaired). OI showed greater levels of employment and lower levels of unengagement but higher rates of dropout. In this way, OI show a similar pattern as LD. OHI worked less probably reflecting the limitations of their mobility and/or physical stamina, were less engaged but dropped out less. This latter combination of findings suggest that they are relatively highly dependent on family (see Table 9) and other institutions.

Persons with high-functioning autism fare much better than their general autistic counterparts but still have difficulty with adult adjustment. Much of their adaptation is dependent on their intellectual level and degree of residual autistic symptoms. Their percentages on most of the critical outcome variables are similar to the handicap group as a whole (except for lower dropout and unengagement rates but this may be a function of being from older samples). Including non-high-functioning autistic individuals, however, would make the adjustment for persons with autism handicap similar to that of other severely handicapped persons.

The MH and D/B show very poor adult adjustment. Unengagement rates are very high, independent living is very low, and dependence on institutions is high.

Relationships Among Outcome Variables

Table 10 presents a correlation matrix of five major adult outcome variables based on the data presented in Table 9. Although the number of cases is low (N = 10, except those involving Living with Parents), interesting relationships emerged from the analysis.

Table 10

Pearson Correlations of Adult Outcome Variables

	Employed	Unengaged	Postsec Educ	Dropped	Live w/Par
Unengaged	-.74*				
Post Educ	.51	-.88**			
Dropped	.70*	-.34	.04		
Live w/Par	.01	.32	-.25	-.28	
Live Indep	.66*	-.83**	.91**	.12	-.28

*$p < .05$ **$p < .01$

As expected, being engaged was significantly related to being employed and receiving any postsecondary education. Disabilities with high rates of engagement also tended to have high rates of employed and postsecondary participants. Interestingly though, postsecondary education participation had a higher correlation with engagement than being employed. There was a significant correlation between dropping out and being employed reflecting the fact that those disability categories that had a high dropout rate also had higher rates of employment. Living independently was significantly related to employment status, engagement rate, and postsecondary education participation. This suggests that a measure of living independently is a global indicator of successful adult outcomes.

Predictors of Outcome

Employment

Table 11 presents a summary of factors found to be associated with successful employment outcomes for each disability group. The table reflects the studies reviewed and conclusions drawn in prior sections. Not all variables have been examined in all disability categories. It should also be noted that employment success was defined in studies in numerous ways such as stability and current job.

Most predictive factors have been associated with MR where considerable research effort has been made. A lack of physical disability, higher IQ, a supportive family, living in a two-parent household, having graduated, getting along with others, and participating in some kind of vocational training, especially work-study, was associated with higher levels of employment for persons with MR. Specialized vocational education/training is predictive for moderately and severely retarded persons. The longer a former student is out of school, the more likely it is that the youth will be employed.

Table 11

Summary of Employment Success Predictors by Disability

Factor	LD	MR	ED	HI	VI	PI	Aut
IQ	X	X					X
Head of House Educ	X			X			
2 parents @ Home		X		X			
Supportive Fam		X					
Not Rural				X			
No Phys Disab/Device		X				X	
Age	X	X		X			
Graduated	X	X		X	X		
Gender	X		X	X	X		
Gets Along Others		X	X				X
Reg Voc Educ		X	X				
Spec Voc Educ		X					
Paid Work	X						
Work Study		X					

Individuals with LD had the next most number of predictive factors of employment. Employment success was associated with age, IQ, head of household education (SES), having graduated, being male, and paid employment. It is unclear whether vocational training helps.

The hearing impaired fared better in employment if they did not live in a rural location, came from a two-parent family, were male, graduated, were older, and had a relatively high head of household education level.

Former students with ED achieved higher levels of employment if they were male, got along with others, and received some vocational education.

Employment success was associated with not using a physical device for PI, being male and graduated for VI, and having higher IQ, social skills, and possibly a supportive family for Aut.

In terms of individual variables, gender and graduation status predicted employment success for most disability groups. Being older, higher IQ, and getting along with others were also frequently predictive.

Educational Attainment

Data predicting educational attainment were presented for only five disability categories (LD, ED, HI, PI, VI). The results were fairly consistent across disability category. Head of household education, graduation status, age and social integration were the main factors predicting postsecondary education participation one to two years after high school exit. IQ and possibly a supportive family were also predictive for LD. For HI, being deaf (rather than hard of hearing) and not a discipline problem were also predictive factors.

Dropout

Factors predicting dropout were also consistent across disability category (LD, MR, ED, HI, VI, PI). Being young and exhibiting negative behavior/being a discipline problem were major predictors of dropout. Other important factors included not getting along with others and failing at least one grade in the most recent school year. Low IQ, uneducated head of household, and absenteeism were additional factors correlating with high school dropout for some disability groups.

Summary

Youth with handicaps do not fare as well as their nonhandicapped counterparts in any aspect of adult status at least soon after high school exit. Their employment levels are lower, dropout rates in some categories are higher, and they do not pursue college as much as the nondisabled. Their transition experience is generally not smooth. A positive transition can be made, however, when services and interventions are provided in high school.

The NLTS combine all disability categories to analyze factors associated with engagement after high school exit. The results of their analysis showed that engagement is highly associated with being a high school graduate, coming from a highly educated family, and not having a physical impairment. Having very good functional ability, being male, socially integrated, not a behavior problem and from a two-parent household also led to higher levels of engagement.

Arenas in which educators can have an effect are (1) improving the graduation rate of the special education population, (2) increasing social and interpersonal skills, (3) insuring that all students have basic functional skills, (4) increasing opportunities for inclusion of students with disabilities with their nondisabled peers, and (5) decreasing disruptive or negative behaviors in the school setting. Individualized programming can focus on those areas that will place students on a positive trajectory.

Based on cost-benefit analyses performed in the area of mental retardation, it is apparent that providing specific programming for this population offsets later costs and leads to increased productivity. Increased productivity included higher rates of employment and independence but also greater taxes paid, lower public service utilization and general satisfaction. There is no reason to believe that providing transitional services for youth with other handicaps would not bring similar results.

Few school districts across the country use written interagency agreements or provide other incentives to secure the involvement of community agencies (Benz & Halpern, 1987; Gill & Edgar, 1990). There is often disagreement between teachers and administrators over who is responsible for transition planning, and parent involvement is low (Benz & Halpern, 1987).

RETROSPECTIVE STUDY OF A SAMPLE OF STUDENTS IN SPECIAL EDUCATION WHO HAVE GRADUATED

To ascertain the outcomes of students in special education in Texas, a sample of former students were identified and studied. Students who had been out of school from one to three years were randomly selected for the study. Five education service centers representing 20 districts across the state contracted with districts which volunteered to participate. An instrument was designed to measure former student functioning in the life skills areas previously listed. In addition, school, family, and community background information was incorporated into the instrument. In all, eight categories were measured. The categories are:

1. district information, including size, number of drop outs, availability of student assistance staff, and number of students on free or reduced price lunch;
2. student information, including data on the individual educational plan (IEP), length of time in special education, and instructional arrangement;
3. family background information, including income and educational level;
4. school records information, including IQ and achievement test scores;
5. transition planning, other agency involvement, and vocational preparedness;
6. productivity, including vocational preparedness while in school, current employment, post-secondary education, including college, proprietary, technical, adult, or vocational training;
7. integration, including friendships with nonhandicapped peers, and access to and use of community recreation activities;
8. independence, living arrangements.

Data collection instruments were sent to the districts participating in the study. District personnel were instructed to select a random sample of former students in special education who had been out of school for at least one year. Procedures for selection of a random sample were provided. Data were mailed back to the agency in the fall. Information was obtained primarily on 230 former students in special education and included the three disability categories with high representation in the state--learning disabilities, emotional disturbance, and mental retardation. Few data were returned on the disability categories of physically handicapped, auditorially impaired, multiply handicapped, and speech handicapped, and none were returned for visually handicapped, autistic, or deaf-blind. Because results from low numbers can be misleading, data from the three disability categories will be presented: mental retardation, emotional disturbance, and learning disabilities.

When data from the longitudinal studies are available, there will be sufficient representation of the other handicapping conditions to enable interpretation of data on all disability categories to be made.

District Information

The 20 districts represented in this sample were both large and small. A complete listing of the districts is included in the appendix. The average daily attendance in these districts ranged from 1,526 to 55,700, with a median of 4,660. Minorities ranged from 5% to 96%, with a median percentage of 35%. The percent of students on free or reduced price lunch ranged from 0 - 87%, with a median of 36%.

The overall dropout rate for students in grades 7 through 12 within these districts ranged from less than 1% to 12%. Accurate dropout information for special education students in Texas is difficult to obtain. Dropout information from the literature review revealed variation across disabilities, ranging from 8% to 49%, with a mean rate of 23%. Raw numbers from the Superintendent's Annual Report indicate that for the 1989-90 school year, 3,698 special education students dropped out of school, compared to 15,380 students receiving special education who graduated.

The overall state percentage of students in special education is 12%. The range for districts in this sample was from 6% to 11%, with a median of 8%.

Thus this sample, though small, represented some of the diversity that occurs in the state.

Student Information

Whenever possible, comparisons are drawn between the descriptive categories in this sample and findings from national reviews or from state data.

Although information from all disability categories was requested, the most common represented was learning disability, representing 74% of this sample. In the state, the category of learning disability represents about 52% of the total special education population, mental retardation represents 7%, and emotional disturbance 9%. The percentages of disability categories for this sample vary from these state percentages.

Table 12

Disability Percentages of Sample of Former Students in Special Education
(N = 230)

PI	AH	MR	ED	LD	SH	MH	Total
2%	1%	13%	8%	74%	.4%	.8%	100%
(5)	(3)	(30)	(19)	(170)	(1)	(2)	230

Note: Actual numbers of persons are in parentheses. PI = physically impaired, AH = auditorially handicapped, MR = mentally retarded, ED = emotionally disturbed, LD = learning disabled, SH = speech handicapped, MH = multiply handicapped. No information was obtained on students with AU (autism), VI (visual impairments), or D/B (deaf-blind).

In the review of national and state research on the effectiveness of special education, it was noted that outcomes varied by disability categories and, in some cases, by gender. Therefore, outcomes will be presented for disability and for gender, when appropriate.

Overall, sixty-four percent of this sample was male and 36% was female. In national studies of the outcomes of students with learning disabilities, 71% were male. In this study 69% of students with learning disabilities were male. Of the group with learning disabilities, gender percentages, however, for mental retardation were the reverse of what has been reported nationally. In the literature review, 62% of the students with mental retardation were male. In this study, a slightly higher percentage of females (53%) were represented than males. Among students with emotional or behavioral disturbance, the overall gender distribution from reviews of the literature indicate three times as many males as females (76% male, 24% female), whereas in this study, gender was about equally divided: 53% of the sample were males and 47% females.

Table 13

Gender by Disability

Disability	Male	Female
MR	47%	53%
ED	53%	47%
LD	69%	31%

Age

The ages of the former students in the sample range from 18 to 25 years old, with 25% being age 20, 24% age 21, 21% age 19, 13% age 22, 8% age 18, 5% age 23, 3% age 24, and 1% age 25.

Gender distributions by age were equally divided.

Ethnicity

The ethnic percentages by gender and by disability are presented in Tables 14 and 15. Statewide data on gender distribution by ethnicity are not available for students in special education.

Table 14

Ethnicity by Gender Percentages

Ethnicity	Male	Female
Am. Ind.	.7%	0
Asian Pac.	0	1%
Black	13%	12%
Hispanic	29%	30%
White	56%	57%
Other	.7%	0

Ethnicity percentages across disability categories for the three major groups (MR, ED, LD) differ from representation in the state. For the MR category this sample underrepresents Black students (Black MR state percentage = 29%; Hispanic = 32%; White = 38%). For the ED category, both the Black and Hispanic representation in this sample is lower than the state representation (Black ED state percentage = 15%; Hispanic = 20%; White = 64%). The representation in the LD category also underrepresents Black students (Black LD state percentage = 18%;

Hispanic - 33%, White - 49%). This sample does not represent the state ethnic distribution for students in special education.

Table 15

Ethnicity by Disability Percentages

Ethnicity	MR	ED	LD
Am. Ind.	0	0	.6%
Asian Pac.	0	0	.6%
Black	17%	11%	12%
Hispanic	40%	10%	30%
White	43%	79%	56%

Age Entered Special Education

Most males were eight years old and females six years old when they entered special education. For both males and females, the majority had been enrolled in special education for 10 years. Information about the age of enrollment and length of enrollment for students in special education in Texas is not available.

Related Services

The majority of individuals had not received related services while in school; 19% had received any related services and 81% received none. Data from the 1989-90 Superintendent's Annual Report indicate that 47% of students in special education received related services. The lower percentage in this sample may suggest that these individuals were functioning at a relatively high level when in the public schools.

Retention

Twenty percent of the sample had been retained at some point in their schooling, leaving 80% who had not.

For those who had been retained, the largest percentage (31%) had been retained at grade 1; 12% at grade 2; another 12% at grade 3; and 19% at grade 9.

Retention by disability categories indicates that of those who had been retained, students with emotional disturbance were in the highest percentage. Statewide information about retention by disability with which to compare these results is not available.

Table 16

Whether Student Had Been Retained by Disability

	MR	ED	LD
Yes	19%	29%	20%
No	81%	71%	80%

Instructional Arrangement

Instructional arrangements refer to the types of settings in which students with disabilities are primarily educated. Definitions of these arrangements follow.

Resource room: Refers to the provision of special education instruction and related services for less than 50% of the regular day and includes any supportive special education services provided in regular education clssses.

Mainstream: Refers to the inclusion of eligible students into regular education classes.

Self-contained, mild and moderate: Refers to the provision of special education instruction and related services for 50% or more of the regular school day in a self-contained program.

Self-contained, severe: Refers to the provision of special education instruction and related services to students with severe handicaps who are in a self-contained program for most of the regular school day.

Self-contained, separate campus: Refers to the provision of special education instruction and related services to students who are in a self-contained program at a separate campus operated by the school district that provides only special education instruction.

Vocational adjustment class: Refers to the provision of special education instruction to students who are placed on a job with regularly scheduled supervision by special education teachers.

Over 50% of the former students in the sample had been served in the resource setting. This is slightly lower than state percentage of 66%. In general, gender was not related to the instructional arrangement, except for vocational adjustment, in which males were more likely to be represented (a gender difference of eight percentage points occurred). Gender distribution by instructional arrangement is not available for the state at this time.

Table 17

Primary Instructional Arrangement by Gender

Instructional Arrangement	Male	Female
Resource	54%	57%
Mainstream	5%	7%
Self-Contained, Mild	6%	10%
Self-Contained, Severe	7%	6%
Self-Contained, Separate	2%	2%
Vocational Adjustment	25%	17%

Note: Percentages do not add up to 100% due to rounding.

For resource settings, mainstream, and vocational adjustment arrangements, students with learning disabilities comprised the largest group. This is consistent with estimates from the state. For self-contained settings, the largest group was students with mental retardation, also consistent with state estimates. Students with ED fall in the middle.

Table 18

Primary Instructional Arrangement by Disability

Instructional Arrangement	MR	ED	LD
Resource	21%	61%	60%
Mainstream	0	6%	7%
Self-Contained, Mild	18%	17%	5%
Self-Contained, Severe	29%	6%	3%
Self-Contained, Separate	14%	0	0
Vocational Adjustment	18%	10%	24%

Family Background

The family's household income for the sample tended to be low. Thirty percent came from families whose annual household income was below $15,000; 29% came from families whose income ranged from $15,000 to $24,999; 18% came from families whose income was $25,000 to $34,999.

For 84% of the sample, the primary language spoken in the home was English. For 14%, the primary language spoken was Spanish.

For 41% of the sample, the highest educational level attained by the head of the family was a high school diploma. In 16% of the families, the head of the household did not complete high school.

Thus the family background of the former students in this sample tended to consist of mostly low income (under $35,000) and mostly English-speaking. Most of the heads of the families had a high school education or less.

School Records Information: Test Scores

Three kinds of scores were obtained: Intelligence test scores (IQ tests), nationally normed achievement test scores, and the Texas Educational Assessment of Minimum Skills (TEAMS) scores.

The distribution by disability category for full scale IQ is indicated below. State distributions of IQ are not available. In the MR category, 56% of the sample fell in the mild range of mental retardation (i.e., an IQ of 50 - 70) and 44% in the moderate to severe range (IQ of 20 - 50). About 50% of the former students with ED and LD fell within in the normal range of intelligence (IQ of 90 and above).

Table 19

Percentage Distribution of Full Scale IQ

IQ	MR	ED	LD
Below 50	44%	0	0
50 - 59	16%	0	0
60 - 69	36%	0	0
70 - 79	4%	22%	24%
80 - 89	0	28%	35%
90 - 99	0	22%	28%
100 - 109	0	28%	12%
110 - 119	0	0	1%

Information was also obtained on the achievement test scores of the sample on nationally normed tests. Between 77% and 79% of the sample obtained scores below the 29th percentile in reading, math, and language on these tests. Given the average aptitude scores of most of the sample (see Table 19), the poor performance on these nationally normed tests warrants closer attention.

Table 20

Percentile Levels On Nationally Normed Achievement Tests

Percentile	Reading	Math	Language
0 - 10	56%	46%	52%
11 - 19	13%	23%	18%
20 - 29	8%	10%	9%
30 - 39	8%	9%	7%
40 - 49	4%	4%	3%
50 - 59	5%	2%	5%
60 - 69	5%	4%	3%
70 - 79	0	2%	2%
80 - 89	2%	1%	1%
90 - 99	0	0	1%

Information was also obtained on the numbers of former students who took the TEAMS. As , the majority of former students did not. Of the total sample, 89% did not take the TEAMS, and 11% had. This is also the percentage breakdown for the LD category. Approximately twice as many students in the ED category took the TEAMS.

While information about exemptions by disability category is not available, estimates from state data indicate that in October 1989, approximately 12,182 students in special education in grade 11 took the exit-level TEAMS. This was about 30% of all students in special education in grades 11 and above (percentages are estimates, given differences in reporting standards). Comparing this estimate to the percentage who took the test in this sample, it is apparent that fewer students in the sample participated in the TEAMS. Some of this difference may be attributable to differences in reporting methods. Additionally, district incentives to involve students in special education in TEAMS testing have increased in the past two years. Therefore, a higher percentage of eligible students are expected to take the exit-level test.

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Table 21

TEAMS Taken by Disability

	MR	ED	LD
Yes	0	21%	11%
No	100%	79%	89%

Transition Planning and Vocational Preparedness

Because research in other states has suggested that receiving vocational education and having work experience while in school are associated with later employment for some disability groups, this information was collected for this sample. Information was obtained on the number of pre-vocational and vocational courses that the students had taken, and whether they had any work experience before graduating. Seventy-four percent of the sample had taken no pre-vocational courses, and 26% had taken one, two, or three. In contrast, almost 69% had taken at least one (and sometimes two or three) vocational courses before graduation; 25% had not taken any. Statewide data are not available for comparison.

Table 22

Number of Pre-Vocational and Vocational Courses by Disability

Number of Pre-Vocational Courses

	MR	ED	LD
None	48%	69%	79%
One	33%	13%	12%
Two	11%	10%	7%

Number of Vocational Courses by Disability

	MR	ED	LD
None	15%	47%	24%
One	50%	41%	50%
Two	4%	12%	15%

Unpaid work experience had been obtained by 56% of the former students in special education while in school; in contrast, 44% had not received this experience. Unpaid work experience was broadly defined as any kind of voluntary work during their school years.

Table 23

Unpaid Work Experience by Disability

	MR	ED	LD
Yes	50%	62%	57%
No	50%	38%	43%

Transition Planning

Since September 1990, students in special education who turn sixteen are required to have Individual Transition Plans (ITP) developed for them. This is a new requirement and was instituted after the graduation of this sample of former students. However, some districts have been doing transition planning for some time. Therefore, information about ITPs was requested to investigate whether ITPs had been developed for any of the persons in this sample. Overall an ITP had been developed for 11% of the sample prior to their graduation; 89% of the persons in this sample did not have this plan.

Table 24

Transition Planning

	MR	ED	LD
Yes	20%	21%	8%
No	80%	79%	92%

Graduation Options

New graduation rules for students in special education went into effect September 1, 1989, allowing students to graduate according to various options. Because the institution of these new graduation requirements is quite recent, information about types of graduation options for these former special education graduates is not available at this time.

Involvement of Outside Agencies With School Districts

Information was requested about the current level of other agency involvement with these former students. In raw numbers, other public agencies are providing services to only fifty-six persons from this sample (i.e., only 24% of the sample). The Texas Rehabilitation Commission (TRC) currently provides services to the largest number of persons in the sample--thirty-four persons. These services are being provided to eighteen persons with learning disabilities, ten persons with mental retardation, two persons with emotional disturbance, two persons with physical handicaps, one person with auditorial impairments, and one person who is multiply handicapped.

In contrast, information was requested as to whether the former student was in need of and eligible for services from another agency. Approximately 50% of the total sample were reported to be in need of services. Fifty-nine percent of the individuals with mental retardation, 25% of the individuals with emotional disturbance, and 32% of the individuals with learning disabilities were reported to be in need of and eligible for services from another public agency.

Productivity

In order to obtain a measure of the productivity of the sample after exiting the school system, information pertaining to employment and post-secondary schooling was requested.

Employment

Information on the current employment status of the sample was obtained. Overall, 66% of the sample was employed, whereas 34% were not. This compares favorably with national studies that report employment percentages ranging from 5% (for persons with multiple handicaps) to 71% for persons with learning disabilities. The comparable rate for non-handicapped persons is 62%. Thus the overall employment percentage is higher than the national percentage for non-handicapped persons.

Males in this sample tend to be employed more often than females. National studies have also reported gender differences in employment.

Table 25

Current Employment Status by Gender

	Male	Female	Total
Yes	72%	54%	66%
No	28%	46%	34%

Among the disability groups, persons with learning disabilities have the highest rate of employment; this compares favorably with national percentages in the LD category that average to 71%. In this study 48% of the persons with mental retardation are employed, compared to a national percentage (for mild retardation) of 51%. For persons with emotional or behavioral disturbance, 59% are employed, compared to 63% in this study. Thus at this time the state percentages of employed individuals in these three disability categories mirrors very closely national percentages.

Table 26

Current Employment Status by Disability

	MR	ED	LD
Yes	48%	63%	69%
No	52%	37%	31%

Forty-two percent of the sample have held their job for at least one year or more. The majority (57%) are working a 40-hour week. Another 13% are working part time. Eighty-five percent are working in a competitive job without support. The types of employment are listed in Table 26.

Table 27

Type of Employment

Competitive without support:	85%
Competitive with limited support:	5%
Competitive with long-term support:	3%
Sheltered community employment	3%
Sheltered employment	3%

Note: Percentages do not add up to 100% due to rounding.

Table 28

Type of Employment By Disability

	MR	ED	LD
Competitive without support	23%	80%	93%
Competitive with limited support	8%	0	5%
Competitive with long-term support	15%	10%	0
Sheltered community employment	23%	10%	0
Sheltered employment	31%	0	0

Note: Percentages do not add up to 100% due to rounding.

Table 29

Wages Earned

Hourly wage	Percent
$3.51 - $4.00	40%
$4.01 - $4.50	21%
$4.51 - $5.00	10%
$5.01 - $5.50	6%
$5.51 - $6.00	5%
$6.01 - $6.50	7%
$6.51 - $7.00	1%
$7.01 - $7.50	1%
$7.51 - $8.00	1%
$8.01 - $8.50	3%
$8.51 - $9.00	3%
$11.51 - $12.00	1%

Note: Percentages do not add up to 100% due to rounding.

A complete listing of the actual job titles by disability categories for the sample is included in the appendix. The listing indicates that most of the jobs tend to be minimum wage job types.

Postsecondary Education

Productivity was also measured in terms of the educational status of the sample. Results are presented in the table below.

Approximately 25% of the sample are engaged in any type of postsecondary schooling, including two- or four-year college, proprietary/technical education, or adult/continuing education. Twenty-one percent have no plans to either continue their education or to work.

Nationally, approximately 28% of individuals with learning disabilities are engaged in postsecondary schooling. In this study a lower percentage was obtained (18%). Among persons with behavioral or emotional disturbance, 23% are in postsecondary schooling; in this study nearly exact percentage was obtained (21%). Among individuals with mental retardation, approximately 14% are reported to be in postsecondary schooling nationally, whereas in this sample only 8% are so engaged. Thus persons with learning disabilities or mental retardation are engaged in additional schooling to a lesser extent than has been reported nationally.

Table 30

Educational Status

No educational plans (will work only)	37%
No plans at all	21%
Post-secondary schooling	17%
Proprietary/technical ed.	5%
Military	3%
Adult/continuing ed.	3%
Additional voc. assessment	1%
Other	13%

Table 31

Educational Status by Disability

	MR	ED	LD
No educational plans	46%	21%	39%
No plans at all	33%	32%	16%
Post-secondary schooling	8%	21%	18%
Proprietary/technical ed	0	5%	6%
Military	0	5%	3%
Adult/continuing ed.	0	5%	3%
Additional voc. assessment	0	0	1%
Other	13%	11%	14%

Independence

Information about the living arrangements of the individuals was obtained. The majority of the sample (59%) are living at home with parents. National reviews indicate that about 70% of individuals with mental retardation live at home after graduation, and another 18% live independently. Within this study, 65% of persons with mental retardation are living with parents. This is slightly lower than the 70% obtained by review of national literature. Only 8% are reported to be living independently, a much lower percentage that is reported nationally. Among persons with behavioral or emotional disturbance, approximately 56% are living with parents and 19% living independently. In this study 58% are at home and 21% independent, very similar findings. Among individuals with learning disabilities, reviews indicate that 71% are with parents and 22% are on their own. In this study a lower percentage are still at home (57%), whereas a higher percentage (35%) are on their own.

Table 32

Current Living Arrangements

With parents	59%
Independent and alone	12%
Independent with spouse	18%
Supervised housing	4%
Other	7%

Table 33

Current Living Arrangments by Disability

	MR	ED	LD
With parents	65%	58%	57%
Independent and alone	8%	10%	14%
Independent with spouse	0	21%	21%
Supervised housing	19%	0	1%
Other	0	5%	5%

Integration

Information about the integration of the former students was obtained. In general, most of the individuals (94%) were reported to have daily contact with non-handicapped peers. Only 6% were reported to have no friendships with non-handicapped individuals.

Information was also requested as to the availability of community recreation programs for the individuals in the sample. Eighty-nine percent of the sample was reported to have access to community recreation programs, and only 11% reported to lack this access.

However, data about actual involvement in community recreation show a reverse effect. Only 32% of the sample actually participate in community recreation programs, whereas 68% do not.

Summary

In general, individuals who are engaged in either educational activities or in work can be considered as productively engaged. A summary of the outcomes of graduates by all disabilities from the national review is presented below. It is followed by a summary of outcomes for this sample. Comparing the engagement and unengagement status of graduates from this study to the findings from the review of literature, one finds a number of similarities. Among individuals with mental retardation, the unengagement status for this sample was approximately 33%, compared to a national unengagement status of 42%. However, this disability category was the only one to include a designation of "other," and additional analyses revealed that this designation included being on a TRC waiting list, waiting for vocational assessment, or waiting for additional training. Thus if this miscellaneous category of "other" is added to the unengaged category, the percentage climbs to 46%, much closer to what has been reported nationally. In the category of BD/ED, one finds that almost one third of the sample are unengaged; this is approximately the same as the national rate of 29%. The fact that this unengagement is occurring among graduates is not encouraging, as only about one half of students with emotional or behavioral difficulties ever graduate, and the unengagement of dropouts tend, of course, to be higher. For individuals with learning disabilities, the unengagement rate nationally and in this preliminary study are approximately equal: 18% nationally, 16% in this study.

It is encouraging to note that the majority of this sample is engaged productively in either work or some type of post-secondary education. The percentages from this preliminary study are generally equivalent to the findings from the national studies, or slightly higher, and suggest that Texas students in special education are faring as well if not better than students in special education in other states. However, it is important to remember that because the sample in this study is not representative of all ethnicities nor of all disability categories, generalizations about the effectiveness of special education in the state have to await further data from the longitudinal study. These data do suggest that approximately one-fifth of this sample (and in some categories one-third) are not productively engaged in any type of work or education. This is a group of individuals who should concern policy makers, because of the human loss as well as social costs consequent to their unengagement.

Table 34

Mean Percentage of Outcome Variables for Graduates: Review of Studies

Condition	Engaged		Unengaged			
	Employed	Any Post-secondary		Lives W/ Parents	Lives Indep.	Dropped Out
LD	71	28	19	71	22	38
MR						
mild	51	14	42	69	18	20
mod/sev	20	8	36	62	6	-
BD/ED	59	23	29	56	19	49
HI	43	47	19	61	32	13
VI	39	40	17	-	26	17
PI	39	28	34	74	19	19
Aut	37	30	17	63	20	13
SH	50	29	19	-	13	33
MH	5	4	59	-	3	18
D/B	10	8	67	-	3	8
Mean (all) (SD)	40 (20)	25 (13)	32 (18)	66 (7)	18 (9)	23 (13)
NH	62	56	50			25

Notes: LD = Learning Disabled; MR = Mental Retardation; BD/ED = Behavior/Emotional Disorders; HI = Hearing Impaired; VI = Visually Impaired; PI = Physically Impaired; Aut = high-functioning Autism; SH = Speech Handicapped; MH = Multiply Handicapped; D/B = Deaf/Blind; NH = Nonhandicapped.

Table 35

Mean Percentage of Outcome Variables for Former Students in Special Education

Condition	Engaged		Unengaged	Liv. w/ parents	Liv. Indep.
	Employed	Any post secondary			
LD	69	27	16	57	35
MR*	48	8	32	65	8
ED	63	32	32	58	31
Mean (all)	66	25	21	59	30

Note: *The unengagement rate for persons with mental retardation is probably higher--13% of persons with MR were listed as engaged in "other" activities. Thess activities included being on waiting lists.

COMMENTS AND CONCLUSION

Because this report contains only preliminary results from what will be a large project, comments about special education effectiveness are included from groups that work on behalf of persons with disabilities. The perspectives from parents and advocates help to provide a balanced assessment of the current effectiveness of special education programs in the state. These comments will help guide the long-term data collection efforts.

A summary of comments from advocacy groups and parents follows.

Texas Planning Council on Developmental Disabilities

There were three major concerns expressed by staff, based upon comments received from parents and direct observation of programs.

1. IEPs are not consistently geared to the needs of the student. They tend to be receptacles into which the student's programming needs are poured.

2. Students are being graduated into nothing. The level of transition planning to help students is very inconsistent.

3. In general, vocational programs are neither appropriate nor effective. While teaching staff seem to want to do what is best for students in most cases, they frequently do not understand how to develop a vocational program that will prepare the student for work. Frequently the programs claim to be community-based, when, in fact, the student never leaves the classroom.

Advocacy, Inc.

Six major concerns were voiced by staff, based upon comments received from parents and direct observation of programs.

1. Segregation is still a problem in many districts. Students are being educated in separate wings of regular campuses and in totally separate campuses, and they are graduating without social skills and with few nonhandicapped friends.

2. Vocational programs are not consistently related to job opportunities in the community, to the interests, aptitidues, or abilities of the students.

3. Regular vocational education has few opportunities for girls with disabilities.

4. Many programs still demonstrate low expectations for students, particularly for students with mental retardation.

5. Best practice information is lacking. Some district staff are unaware of the variety and range of vocational training opportunities

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that can be offered to students; many provide greenhouse training and believe that that is sufficient.

6. The preferences of parents and the individuals themselves are frequently not taken into account. Simple questions, such as "What would you like to see your son or daughter doing?" are never asked.

Parents

The comments below are taken from public testimony quoted in the Texas Planning Council for Developmental Disabilities report, Toward Independence, Productivity and Integration: Recommendations for Improving Services to People with Developmental Disabilities in Texas, January 1990.

1. "We, too, were appalled at the quality of the special education programs in public schools even though we felt ... they were doing the best they could do." (Parent from Waco)

2. "We feel [our daughter] has been educationally deprived ... I think it would be more important to teach our daughter a workable skill as soon as possible so she would not be dependent on the parents or government for the rest of her life." (Parents from Orange)

3. "There is still a real need to promote better understanding between handicapped and nonhandicapped persons. This understanding must start when they are very young, when they begin school." (Parent from Vidor)

4. "The most effective avenue for changing attitudes ... is integration in a positive, deliberate side-by-side interaction on a consistent basis in normal settings and normal activities--not by proximity on an occasional, staged basis." (Parent and professional from Beaumont)

Integrating these comments with the preliminary findings from the data collection efforts so far, it appears that improving the outcomes for students in Texas is a major concern of many groups. Texas' students are generally faring no better than students in other states. There is a need to increase schools' focus upon the inclusionary and outcome-oriented programming that can help students make a successful transition to adulthood. Comments from advocates and parents suggest that special education programs, because they mirror social conditions, need to be responsive to these conditions. Through the establishment of a Project Advisory Committee, composed of members of advocacy groups, parents, consumers, and educators, these concerns can be incorporated into the on-going study of the statewide special education effectiveness. Further, interviews with parents and students with disabilities, a major component of the study on transition planning, will enable a balanced perspective on what is working in special education programs and what remains to be changed.

The results of the comprehensive evaluation, involving three cohorts of students, analyses of family and community variables, and interviews with students, will contribute greatly to school districts' knowledge of their effectiveness with ALL students, and will help districts provide quality education with full recognition and encouragement of the wide range of human diversity.

Recommendations

The recommendations below synthesize the findings reported from the review of national and state studies. They suggest best-practice approaches based upon current knowledge of factors associated with positive outcomes for students with disabilities. They are presented as a framework for guiding school districts in their efforts to prepare students for post-school transitions. They are also presented to guide the data collection during the next three years for the statewide evaluation project. The recommendations are presented, followed by a statement on the current status of the recommendation based upon the Texas statewide evaluation project.

General

1. Systematic, cooperative ventures between special education and regular education, especially in vocational programming, as well as between special education departments and outside (public) agencies, will facilitate positive transition.

   Evaluation Project Status: This is being evaluated in the longitudinal component of the study.

2. Increased parent involvement, which appears to be effective with students who are more severely disabled, can serve as a model for students in special education and increase their chances of smooth transition. Making parent involvement a major focus of transition planning is recommended.

   Evaluation Project Status: This will be evaluated in the family and community case analyses component of the study.

3. Given current research and the general conclusions drawn from this review, future monitoring or accreditation could include specific programmatic elements that have been effective with eligible students. If a work-study program, for example, was found to be an important element for persons with MR, then monitoring or accreditation could require such a program.

   Evaluation Project Status: This is being evaluated. Recommendations about data elements that could be incorporated into regulatory documents will be made at the project's conclusion.

4. No single essential element for a special education curriculum crosses all disability categories. The needs of persons with autism, for example, are quite different than those who are mildly hearing impaired or learning disabled. The development of essential elements, however, can occur through individual education plans that include the placement of students into programs with proven effectiveness.

   Evaluation Project Status: This is under review and will be evaluated throughout the duration of the project.

5. The needs of rural graduates may be different from graduates of urban areas. Analysis of these differences warrants further investigation.

   Evaluation Project Status: This is under review and will be evaluated in the family and community case analyses component of the study, as well as during analysis of results from the longitudinal study.

Learning Disabilities

6. Provide a specific dropout prevention program for students with LD. These individuals are employed at reasonably high rates, but do not attend post-secondary educational institutions at the same rate as their nondisabled counterparts. Therefore, specific dropout prevention programs should target the young (age 13-16), focus on the benefits of staying in school (higher salary, etc.), develop behavior management systems, and teach social skills. Sensitizing regular education teachers to the special needs of these students is also an important component.

7. Programming should provide specific vocationally-oriented training along with help in finding paid employment during the summer or part-time after school.

8. Improving communication skills is important to become socially integrated as well as to communicate basic needs. Specific programming should teach basic functional skills, social skills and interpersonal skills. Increasing vocabulary would be an important part of such a curriculum.

   Evaluation Project Status: Specific dropout prevention programs will be investigated during the family and community case analysis component of the study. Information from PEIMS will be incorporated as appropriate. Recommendations # 2 and 3 are being assessed in the longitudinal component of the study.

Mental Retardation

9. Specialized vocational programming, such as work-study and other paid employment, is important for this group.

10. Developing a program to get families involved in the educational needs of their children appears particularly advantageous with this group.

11. Increasing social/interpersonal/communication skills through inclusionary practices can increase employment and interpersonal stability.

    Evaluation Project Status: Information about vocational programming, parent involvement, and communication skills will be gathered in the family and community case analysis component of the study.

Behavioral/Emotional Disorders

12. Dropout prevention is of the utmost priority for this group. With a 49% dropout rate, keeping these youth in school is the critically important task. Making school a successful experience can be difficult to achieve since many of these students exhibit counterproductive behaviors. Professionals with expertise in developing individualized behavior management programs for these youth are needed to help them cope with problems constructively.

    Evaluation Project Status: Dropout data will be gathered during the family and community case analyses component of the study.

Hearing Impairments/Visual Impairments/Physical Impairments

13. As with students with ED, making sure this group graduates is a major concern. Decreasing negative behavior and improving social skills will help the transition toward graduation.

    Evaluation Project Status: Graduation information is being gathered throughout all components of the study.

Autism/Multiple Handicaps/Deaf/Blind

14. These students' needs are great and they will be dependent to some degree for most of their lives. Model programs that work to decrease their dependence should be implemented.

    Evaluation Project Status: Model programs and approaches to reduce dependency and increase autonomous functioning will be investigated in the family and community case analyses component of the study.

Gender

15. Males are employed at higher rates, attend post-secondary schools at higher rates, and live more independently than females. Specific programming for females is needed. Susan Hasazi, in a personal communication, noted that females do not take employment seriously and are more willing to be dependent on others, especially family. In the studies that included training of both sexes, females showed the greatest benefit. Programming for female students with disabilities needs to focus upon setting high expectations for vocational self-sufficiency and educational extension.

    Evaluation Project Status: Gender differences have already been noted in the preliminary results of the study, and will be carefully analyzed throughout the remainder of the project. Factors that predict success for females will be investigated so that successful programmatic elements can be identified and their development encouraged in schools.

METHODS OF MONITORING THE EFFECTIVENESS OF SPECIAL EDUCATION PROGRAMS

Special education programs in the state are monitored on a five-year cycle. Approximately sixty programs are monitored each year. The purpose of monitoring is to help special education programs verify whether they are in compliance with appropriate state and federal rules and regulations and, if not, to help them reach compliance.

During on-site visits, team members area use an approved monitoring instrument which includes all compliance items that are to be monitored, statutory authority references, notes on how to conduct the investigation, in each area, and field notes or documentation that needs to be collected. A copy of the monitoring instrument is mailed to the program with a notification letter before the visit.

The agency is now required to obtain information from parents of students in special education programs in the districts being monitored. The information is gathered through parent meetings that are conducted during the visit with the exception of programs that are visited as part of a follow-up monitoring.

Compliance monitoring is not designed to investigate quality or program effectiveness. However, technical assistance is sometimes provided to districts during the monitoring process to help them provide quality programming. To investigate the types of technical assistance provided and the indicators of program effectiveness that directors of special education perceive as important, a post-monitoring survey instrument was designed. This instrument was sent to directors of special education in every district monitored during the 1989-90 school year (a total of 63 districts). Forty-one instruments were returned for a response rate of 65%. A list of districts that participated in this study and the survey instrument are included in the appendix.

Types of Technical Assistance

Respondents were first asked to indicate whether technical assistance was offered and provided by monitoring staff during the monitoring visit. Fifty percent of respondents indicated that technical assistance was provided. Respondents were then asked to indicate the types of technical assistance provided. These responses fell into six categories. The categories and percentage of respondents indicating that this was the type received are listed in Table 36.

Table 36

Types of Technical Assistance Provided During Special Education Monitoring, 1989-90

Type	Percentage
Forms	61%
Financial	17%
Regular Education Modifications	9%
Curriculum	4%
Appraisal	4%
Placement	4%

Effects of Monitoring: Change Initiated

Respondents were asked whether, as a result of monitoring, the district had initiated a significant change in its special education program or had made an administrative change. Ninety-six percent of respondents indicated that a change had been initiated subsequent to the monitoring visit. The types of special education program components that were changed as a result of the monitoring visit are listed in Table 37.

Table 37

Program Components that Changed Subsequent to Monitoring

Component	Percentage
Least restrictive environment	50%
Appraisal	13%
Accounting	13%
Regular education modifications	4%
IEP development	4%
Failure admission, review, dismissal meetings	4%
Transportation	4%
Other	8%

Effectiveness Indicators

Respondents were asked what they thought were the best indicators of the strengths or quality of their district's special education program. Seven categories of indicators were provided.

Table 38

Possible Indicators of Special Education Effectiveness

Indicators	Percentage
Personnel quality	39%
LRE	19%
Parent/student satisfaction	17%
Regular ed./special ed./other agency coordination	11%
Post-graduation outcomes	6%
Other	8%

Note: Percentages do not add up to 100% due to rounding.

Finally, respondents were asked to indicate the types of effectiveness indicators that might, in the future, be included in either monitoring or accreditation. Thirty-eight percent indicated that no change should be made to the current monitoring or accreditation documents, and that effectiveness indicators for special education should not be included. However, the remaining 57% suggested that either programmatic or outcome-oriented indicators be included. The suggested indicators are listed below.

Table 39

Possible Indicators For Accreditation or Monitoring Purposes

Indicators	Percentage
No change	38%
Range of services/ reg. ed./spec. ed coordination	18%
IEP quality	12%
Personnel quality/stability	12%
Parent/student satisfaction and progress	9%
Graduation outcomes	6%
Other	5%

Summary

Fully half of the directors of special education who had been monitored during the 1989-90 school year indicated that they had received technical assistance during the monitoring visit. Almost all indicated that the monitoring visit had prompted them to make a significant change in their programs or procedures. There was a range of effectiveness indicators that the directors thought were significant in their programs. The largest percentage listed personnel quality or stability as the most important indicator of the quality of their program. In response to the suggestion that effectiveness indicators be included in future monitoring or accreditation, 38% percent of the respondents stated that no change should be made to current procedures. However, 57% of respondents listed possible indicators, including coordination of school programming (especially coordination between regular and special education), personnel quality, parent and student satisfaction, and post-graduation outcomes. Current agency efforts to integrate monitoring with program evaluation include the development of academic excellence indicators for special populations and the use of PEIMS data, when appropriate.

LONGITUDINAL STUDY

Assessing the effectiveness of special education programs is a complex task. Some aspects of the programs cannot be controlled by the public school system. These aspects include parental support, financial resources, and other agency support. Most students in special education spend part of their day in a regular education program. The special education program supports the regular education program, and both of these, in turn, are influenced by factors outside of the school. Any evaluation of special education must take into account these external factors.

In addition, the legislative mandate requires investigation of the quality of services provided to students in transition from public school to a post-secondary setting. Transition planning has only been required for students in special education since the current 1990-91 school year. Further, the ability of a former student who has transitioned out of public school to a new setting cannot be assessed using a singular measure at the end of the school experience.

To be valid, the outcomes of these students must be assessed over a period of time. Longitudinal research can mitigate the effects of extraneous factors, such as those mentioned above.

The longitudinal study of the outcomes of Texas students in special education, currently in progress, entails the study of 953 students in special education, representing all disability categories. All students are in their last year of public schooling. Sixty-four districts have volunteered to participate in this study. The districts are being paid on a per-student basis for their participation.

All public school districts in the state were informed of this study by letter to their superintendent. Two hundred and fifty-three districts indicated a willingness to participate. From this list, the sixty-four districts were randomly selected. Districts were then instructed to randomly select students receiving special education who are in their last year of school for this study. A list of the districts participating in this study is included in the appendix.

To date, data from 564 students have been received. All disability categories are represented.

Because outcomes tend to change over time, the former students will be tracked over several years. They will be followed through 1994. On a yearly basis, districts will be furnished with a follow-up instrument and asked to contact the former student (or parents) to determine his or her current functioning in three domains: productivity, integration, and independence. These are the three domains constituting the widely accepted areas of life skills.

By the end of the study in 1994, comparisons will be made between the outcomes of students in the retrospective study, the outcomes of students in the longitudinal study, and a younger cohort of students (described below). Thus three samples will be available for comparison.

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and factors that affect positive post-school outcomes will be identified. The extraneous factors that have an impact upon the effectiveness of school experiences will also be known.

EVALUATION OF THE TRANSITION PROCESS

To augment the studies described above, the Texas Planning Council for Developmental Disabilities has awarded the agency a three-year, $210,000 challenge grant. This grant will focus upon the transition process for students in special education. Specifically, this project has four main purposes:

1. to develop data elements that describe the in-school transition process and that document service needs, placements, and outcomes for a younger cohort of students in special education;

2. to develop data elements that describe the post-school service needs, placements, and outcomes for this cohort;

3. to conduct a survey of students, their families, and service providers to gather information on the transition process from their perspective; and

4. to provide a project advisory committee to review the results of the data collection and make recommendations to the Planning Council on the transition process and on significant data elements that could be incorporated into an agency tracking process.

Five hundred students in special education for whom transition planning has begun will be followed for three years. Results from the study of this younger cohort of students will be compared to results from the longitudinal sample and to the retrospective sample.

Additionally, ten communities will be intensively studied, through in-depth case analyses. Data will be gathered on the level of parental and student satisfaction with special education programs, the level of parental, student, and other agency involvement in transition planning, and the extent, nature, and types of community resources that support or interfere with the special education programs. This approach applies an ecological framework to identify individual, family, and community resources that may influence the effectiveness of special education programs. Understanding these community contexts will provide a stronger basis upon which to make conclusions about those factors that lead to positive outcomes for students in special education. The results of the research from this grant, when integrated with the results from the other studies, will provide a rich database for identifying those factors.

IMPLICATIONS OF CURRENT STUDIES FOR A SPECIAL EDUCATION CURRICULUM

The agency was also asked by the legislature to evaluate the appropriateness of essential elements for a required special education curriculum and of basic skills assessment for special education programs. Curriculum and assessment are individualized for each special education student. Appropriateness of programs and placement are determined by multidisciplinary admission, review, and dismissal committees on an individual basis. The current longitudinal and transition studies that are being conducted and that have been described include the collection of information about these two types of information. Information is being obtained about special education programs at the district level (number of staff, types of assessment used, types of programming options, types of student assistance offered), and information is being obtained about each student's individual education plan, including types of goals, number of goals identified, number of objectives identified, and number of goals and objectives achieved. When these data have been analyzed, they will yield important information about the appropriateness of current special education curriculum at both the district and individual level.

Results from the review of national and state studies on the effectiveness of special education programs suggest that no single essential element for a special education curriculum can be isolated that will be valid across all disability categories. The needs of individuals with different disabilities vary considerably; it was for this reason that the original federal Public Law 94-142 mandated that each student eligible for special education be ensured the development of an individualized education plans to address his or her particular academic, social, or behavioral goals and objectives.

Because both curriculum and assessment for students in special education must be individualized for each student, the types of assessment vary. When the results of the longitudinal studies are completed, information about the basic skills that are important in encouraging positive student outcomes, the kinds of programs that lead to success, and the kinds of assessments that are most appropriate, will be identified. Conclusions that can guide the public schools and encourage positive outcomes for students will be vital to ensuring that the public school system is accountable to its consumers: students.

Appendix

Current Jobs of Former Students in Special Education

Mechanic	LD
Plumber	LD
Day Care Worker	LD
Nursing Home Aide	LD
Day Care Worker	LD
Nursing Home Attendant	LD
Cook	LD
Child Care	ED
National Guard	LD
Construction	LD
Recycling	MR
Recycling	MR
Recycling	MR
Goodwill	LD
Oil Fields	LD
Short Order Cook	LD
Gas Monitor	LD
Shipping/Receiving	LD
Restaurant Work	LD
Parking Lot Attendant	MR
Technical School	LD
Taco Bell Cook	LD
Maintenance	LD
Tree Trimming	LD
Factory Worker	LD
Art Institute	LD
Sheet Metal	LD
Body Shop	SH
Navy	LD
College	LD
Legal Secretary	ED
Insurance Company Clerk	LD
Cable Installer	LD
Sheltered Work	MR
Security Guard	LD
Store Clerk	LD
Maintenance	MR
Service Station Clerk	LD
Mechanic	LD
Lawn Maintenance	AH
Landscape Assistant	LD
Tape and Bedding	LD
Auto Body Shop	LD
Bus Boy	LD
Game Room Mechanic	LD
Grocery Stocker	LD
Military	LD
Rolling silverware at Red Lobster	MH
Carpet Layer	LD
Hairdresser	MR

Kitchen Help	LD
Grocery Stocker	LD
Janitor	LD
General Rental Office	LD
Telephone Cable Installer	LD
Assistant Manager/Video Games	PH
Painter	LD
Construction	LD
Mechanic	LD
Sales Clerk	LD
Sales Clerk	LD
Gas Station Attendant	LD
Telephone Cable Installer	LD
Assistant Line Worker	AH
Garbage Man	LD
Computer Operator	LD
Mechanical Supply Stocker	LD
Walmart - Receiving	MR
Hospital Maintenance	LD
Sales	LD
Runner with Law Firm	LD
Pizza Parlor	MR
Mail Center	LD
Dry Cleaner	ED
Pouring Concrete	LD
Waiter	LD
Selling Shoes	LD
Small Engine Mechanic	LD
Construction Worker	LD
Food Service Help	ED
Baby Sitter	ED
Real Estate Assistant	LD
Manager/Golf Course	LD
Inspector/Trainer for Painting Firm	ED
Temporary Services	LD
Military/Army Communications Specialist	LD
Job Corps	MR
Secretary in Law Firm	ED
Department Store Sales Clerk	LD
Store Clerk	LD
Factory Assistant	LD
Cleaning Machines at Burger King	LD
Cosmetologist	LD
Security Guard	LD

Districts Participating in Longitudinal Study

District	ESC #	# of Students Participating
Amarillo	16	32
Arlington	11	52
Athens	07	4
Bay City	03	6
Brownsville	01	44
Brownwood	15	5
Burkeville	05	2
College Station	06	6
Collinsville	10	2
Comal	13	6
Corpus Christi	02	25
Corsicana	12	6
Cypress-Fairbanks	04	47
Deer Park	04	12
DeKalb	08	2
Del Valle	13	6
Denton	11	15
Eagle Pass	20	10
Falls City	03	2
Frankston	07	2
Fort Worth	11	83
Frenship	17	5
Galena Park	04	15
Garland	10	35
Goose Creek	04	17
Harlingen	01	17
Hays-Blanco Special Education Coop (Hays ISD)	13	9
Hondo	20	2
Humble	04	23
Hurst-Euless-Bedford	11	18
Katy	04	18
Keller	11	9
Killeen	12	28
Kingsville	02	7
Klein	04	30
La Porte	04	9
Laredo	01	23
Lubbock	17	30
Manor	13	3
Martinsville	07	2
Muleshoe	17	2
New Braunfels	13	6
New Caney	06	6
Northside (San Antonio)	20	59
Paint Rock	15	2
Pampa	16	6
Perryton	16	2
Point Isabel	01	2

Port Aransas	02	2
San Angelo	15	20
San Antonio	20	74
Santa Fe	04	5
Seguin	13	8
Shelbyville	07	2
South San Antonio	20	15
Taylor	13	3
Temple	12	10
Texas City	04	6
Three Rivers	02	2
Victoria	03	15
Waco	12	17
Wall Coop (21 districts)	15	10
Waxahachie	10	8
Yorktown	03	2

Total Number of Districts: 64 Total Number of Students: 953

Districts Participating in Retrospective Study

Bastrop ISD
Beeville ISD
Brownsville ISD
Clint ISD
Comal ISD
Eanes ISD
El Paso ISD
Greenville ISD
Hays Consolidated
Klein ISD
Lake Travis ISD
Mathis ISD
Mesquite ISD
Pflugerville ISD
Richardson ISD
Sinton ISD
Socorro ISD
Terrell ISD
Wylie ISD
Ysleta ISD

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COMPLIANCE STATEMENT

TITLE VI, CIVIL RIGHTS ACT OF 1964; THE MODIFIED COURT ORDER, CIVIL ACTION 5281, FEDERAL DISTRICT COURT, EASTERN DISTRICT OF TEXAS, TYLER DIVISION

Reviews of local education agencies pertaining to compliance with Title VI Civil Rights Act of 1964 and with specific requirements of the Modified Court Order, Civil Action No. 5281, Federal District Court, Eastern District of Texas, Tyler Division are conducted periodically by staff representatives of the Texas Education Agency. These reviews cover at least the following policies and practices:

(1) acceptance policies on student transfers from other school districts;

(2) operation of school bus routes or runs on a non-segregated basis;

(3) nondiscrimination in extracurricular activities and the use of school facilities;

(4) nondiscriminatory practices in the hiring, assigning, promoting, paying, demoting, reassigning, or dismissing of faculty and staff members who work with children;

(5) enrollment and assignment of students without discrimination on the basis of race, color, or national origin;

(6) nondiscriminatory practices relating to the use of a student's first language; and

(7) evidence of published procedures for hearing complaints and grievances.

In addition to conducting reviews, the Texas Education Agency staff representatives check complaints of discrimination made by a citizen or citizens residing in a school district where it is alleged discriminatory practices have occurred or are occurring.

Where a violation of Title VI of the Civil Rights Act is found, the findings are reported to the Office for Civil Rights, U.S. Department of Education.

If there is a direct violation of the Court Order in Civil Action No. 5281 that cannot be cleared through negotiation, the sanctions required by the Court Order are applied.

TITLE VII, CIVIL RIGHTS ACT OF 1964; EXECUTIVE ORDERS 11246 AND 11375; TITLE IX, 1973 EDUCATION AMENDMENTS; REHABILITATION ACT OF 1973 AS AMENDED; 1974 AMENDMENTS TO THE WAGE-HOUR LAW EXPANDING THE AGE DISCRIMINATION IN EMPLOYMENT ACT OF 1967; AND VIETNAM ERA VETERANS READJUSTMENT ASSISTANCE ACT OF 1972 AS AMENDED IN 1974.

It is the policy of the Texas Education Agency to comply fully with the nondiscrimination provisions of all federal and state laws and regulations by assuring that no person shall be excluded from consideration for recruitment, selection, appointment, training, promotion, retention, or any other personnel action, or be denied any benefits or participation in any programs or activities which it operates on the grounds of race, religion, color, national origin, sex, handicap, age, or veteran status (except where age, sex, or handicap constitute a bona fide occupational qualification necessary to proper and efficient administration). The Texas Education Agency makes positive efforts to employ and advance in employment all protected groups.

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